

تم التصميم حسب الكودات المعتمدة  
بموجب التعليمات الفنية السارية  
مكتب رقم - ٥

### MECHANICAL LEGEND

DRAINAGE SYSTEM	
ABBR. & SYMBOLS	DESIGNATION
—	DRAIN PIPE
— VP —	VENT PIPE
FD	FLOOR DRAIN
CO	FLOOR CLEAN OUT
TD	TRENCH DRAIN
MH	MANHOLE
uPVC	UNPLASTICIZED POLYVINYL CHLORIDE
IL	INVERT LEVEL
T/B	TO BELOW
F/B	FROM BELOW
T/A	TO ABOVE
F/A	FROM ABOVE
D/D	DROP DOWN
A/F	ABOVE FALSE CEILING
SP	SUBMERSIBLE PUMP

WATER SYSTEM	
ABBR. & SYMBOLS	DESIGNATION
DHWS	DOMESTIC HOT WATER SUPPLY
DCWS	DOMESTIC COLD WATER SUPPLY
-----	IRRIGATION PIPE
	HAND SPRAY
	FLOAT VALVE
	STRAINER
	WATER CABINET
	GLOBE VALVE
	CHECK VALVE (NON RETURN VALVE)
	PRESSURE VESSEL
	BLADDER VESSEL
	PUMP
E.W.H.	ELECTRIC WATER HEATER
	WATER METER
	SUSPENDED CLEAN OUT
DCWP	DOMESTIC COLD WATER PUMP
BP	BOOSTER PUMP
IRP	IRRIGATION PUMP
N.C	NORMALLY CLOSED
GSP	GALVANIZED STEEL PIPE
cPVC	CHLORINATED POLYVINYL CHLORIDE
H/L	HIGH LEVEL
T/B	TO BELOW
F/B	FROM BELOW
T/A	TO ABOVE
F/A	FROM ABOVE
U/T	UNDER TILE
I/W	IN WALL
A/F	ABOVE FALSE CEILING

FIRE FIGHTING SYSTEM	
ABBR. & SYMBOLS	DESIGNATION
— F —	FIRE HOSE REEL PIPE
⊙ F.Ex.	FIRE EXTINGUISHER
	FIRE HOSE REEL
	FIRE HOSE REEL CABINET
H/L	HIGH LEVEL
T/B	TO BELOW
F/B	FROM BELOW
T/A	TO ABOVE
A/F	ABOVE FALSE CEILING

HVAC SYSTEM	
ABBR. & SYMBOLS	DESIGNATION
— —	HOT WATER SUPPLY
— —	HOT WATER RETURN
	PACKAGED AIR CONDITIONING UNIT
	SOUND ATTENUATOR
	VOLUME DAMPER
	OUTDOOR SPLIT UNIT
	REFRIGERANT PIPE
	BELL MOUTH
	THERMOSTAT
	SUPPLY DIFFUSER
	RETURN DIFFUSER
	AIR GRILLE
	EXHAUST DIFFUSER
	VERTICAL DUCT
	INDOOR SPLIT UNIT
	HEATING CABINET
	EXHAUST FAN
	RADIATOR
T.R	TON OF REFRIGERATION
EX.D	EXHAUST DUCT
EX.F	EXHAUST FAN
HWB	HOT WATER BOILER
WSD	WAY SUPPLY DIFFUSER
WRD	WAY RETURN DIFFUSER
DB	DRY BULB TEMPERATURE
WB	WET BULB TEMPERATURE
H/L	HIGH LEVEL
T/B	TO BELOW
F/B	FROM BELOW
T/A	TO ABOVE
F/A	FROM ABOVE
U/T	UNDER TILE
I/W	IN WALL
D/D	DROP DOWN
A/F , AFC	ABOVE FALSE CEILING

#### NOTE:

1—CONTRACTOR SHALL CALCULATE PRESSURE LOSSES THROUGH VALVE, FITTINGS, STRAINERS, DOUBLE REGULATING VALVE, ETC..... FOR DETERMINATION OF PUMP HEAD ACCORDING TO SUGGESTED LAYOUT.

2—CONTRACTOR SHALL CALCULATE PRESSURE LOSSES THROUGH DAMPERS, FITTINGS, COIL, SOUND ATTENUATES ETC.... , FOR DETERMINATION OF FAN HEAD ACCORDING TO SUGGESTED LAYOUT.

REV.	DATE	REMARKS
0	JUNE 2019	VOL. IV - TENDER DRAWINGS

NOTES:



PHASE III  
PACKAGE 2

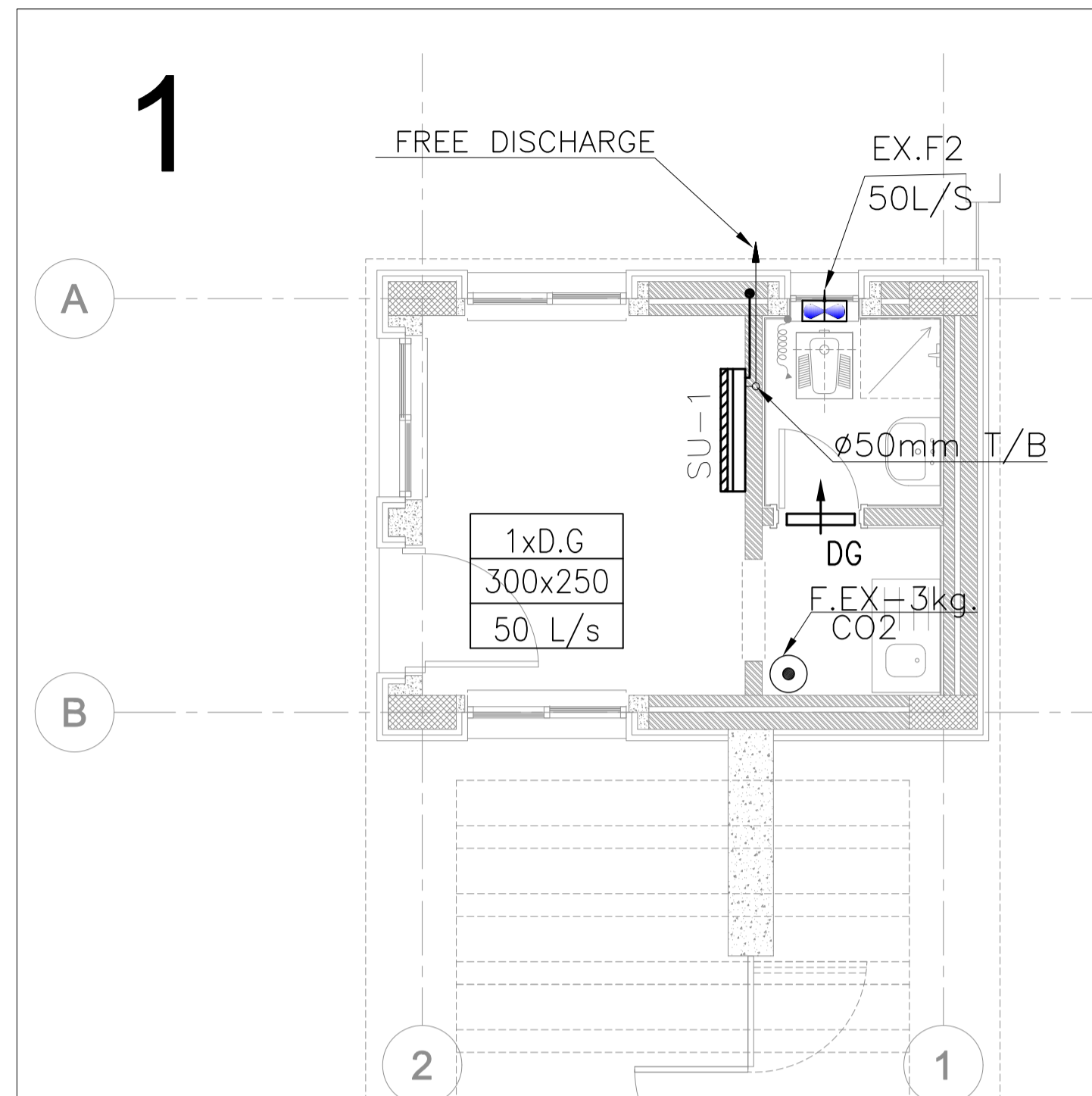
Thahr Al Sarow Basic School For Boys  
(Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY  
PROJECT (USAID SKEP)

DRAWING NAME:

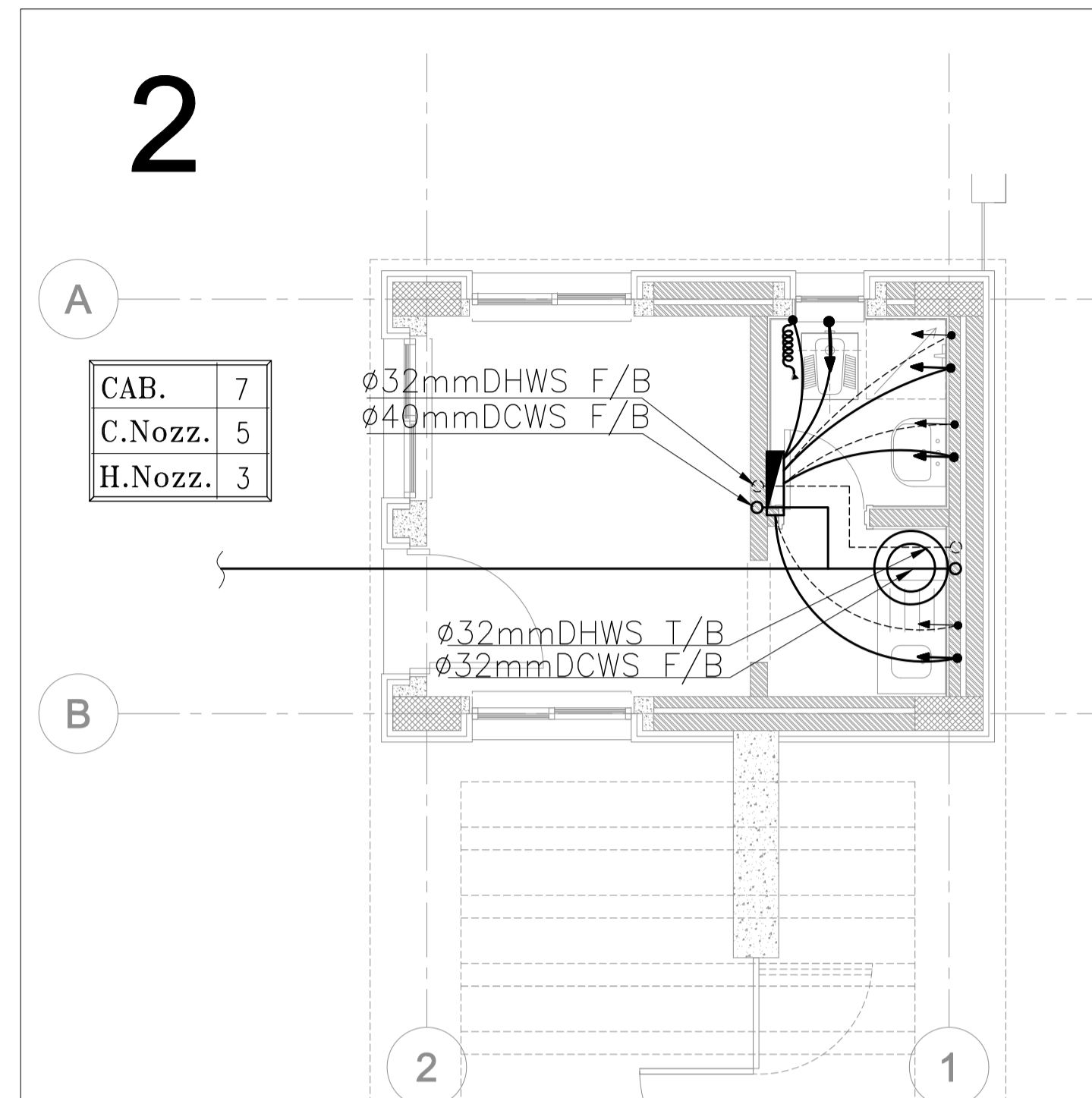
Mechanical  
Legend

PLOT No	LOCATION	BASIN NO
435	Thahr Al Sarow	4 Dair Alliat

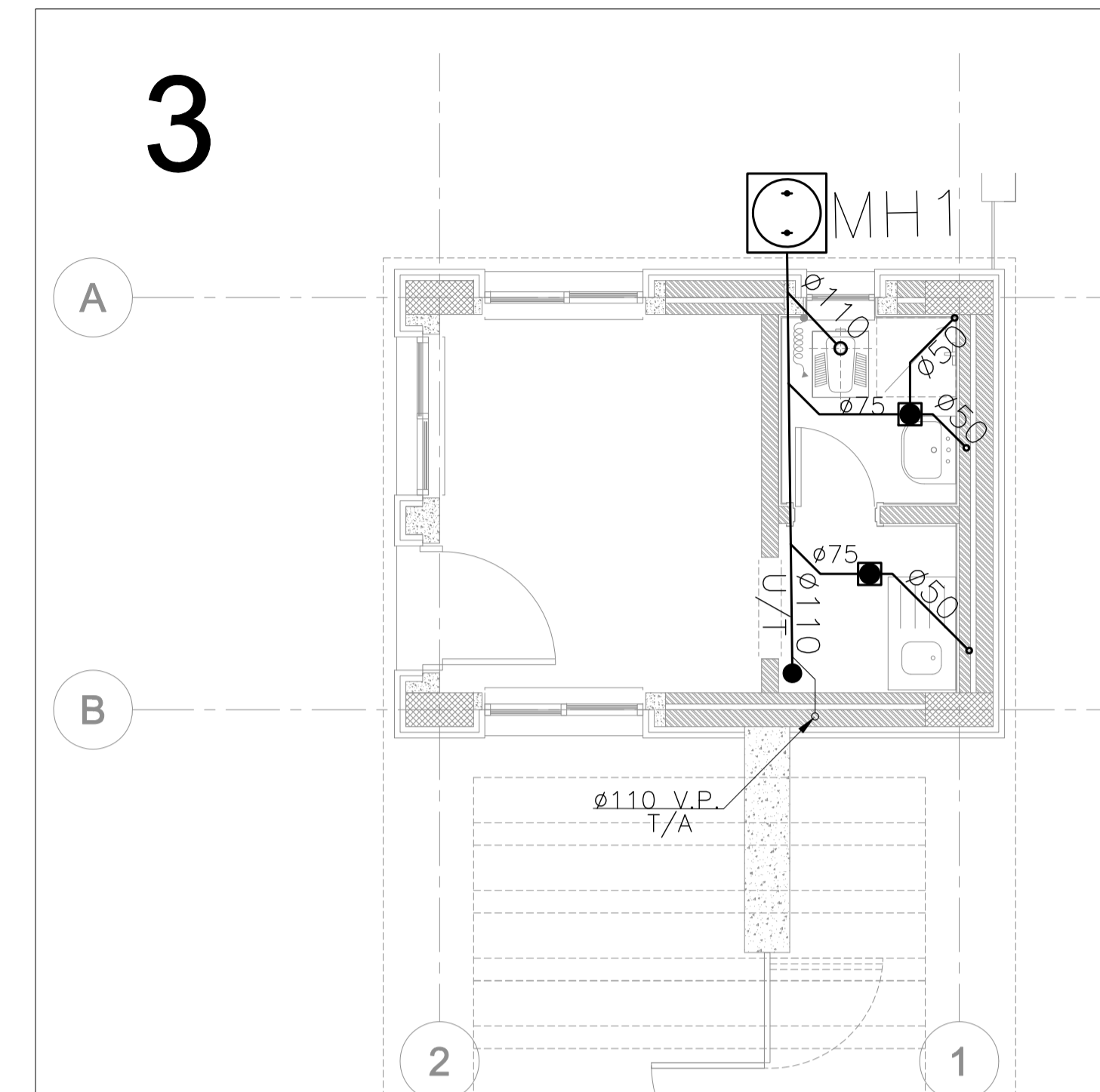
Design:	Drawn:	Checked:	North:
S.H.	CAD	A.J.	
SCALE:	Date:	Approved:	
N.T.S	JUNE 2019	W.Z.	
DRAWING NUMBER:			Rev.:
SKEP 14-GM001			0



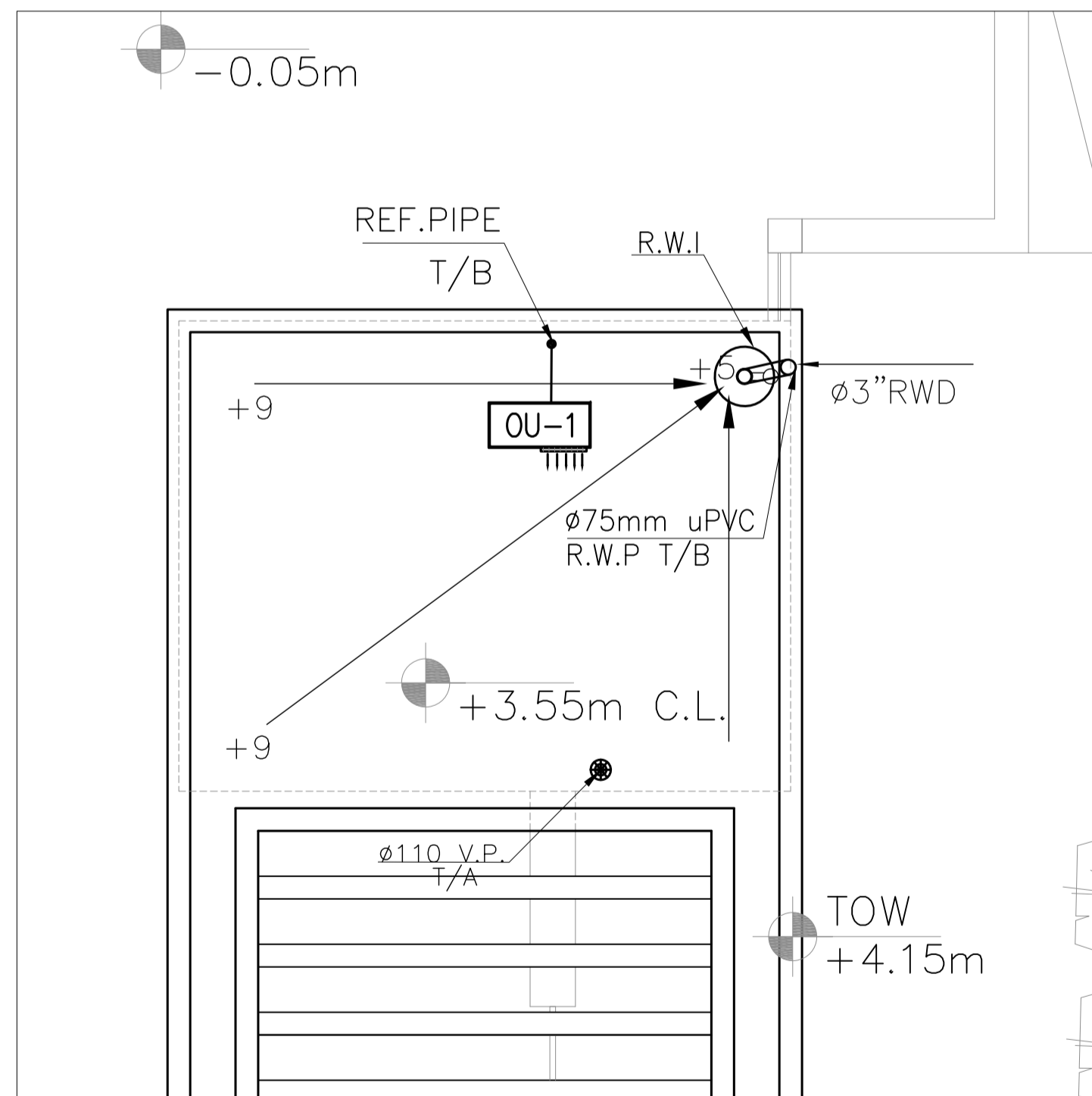
1 GUARD HOUSE HVAC SYSTEM LAYOUT



2 GUARD HOUSE WATER SYSTEM LAYOUT



3 GUARD HOUSE DRAIN SYSTEM LAYOUT



4 GUARD HOUSE ROOF LAYOUT

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0	June 2019	VOL. IV - TENDER DRAWINGS

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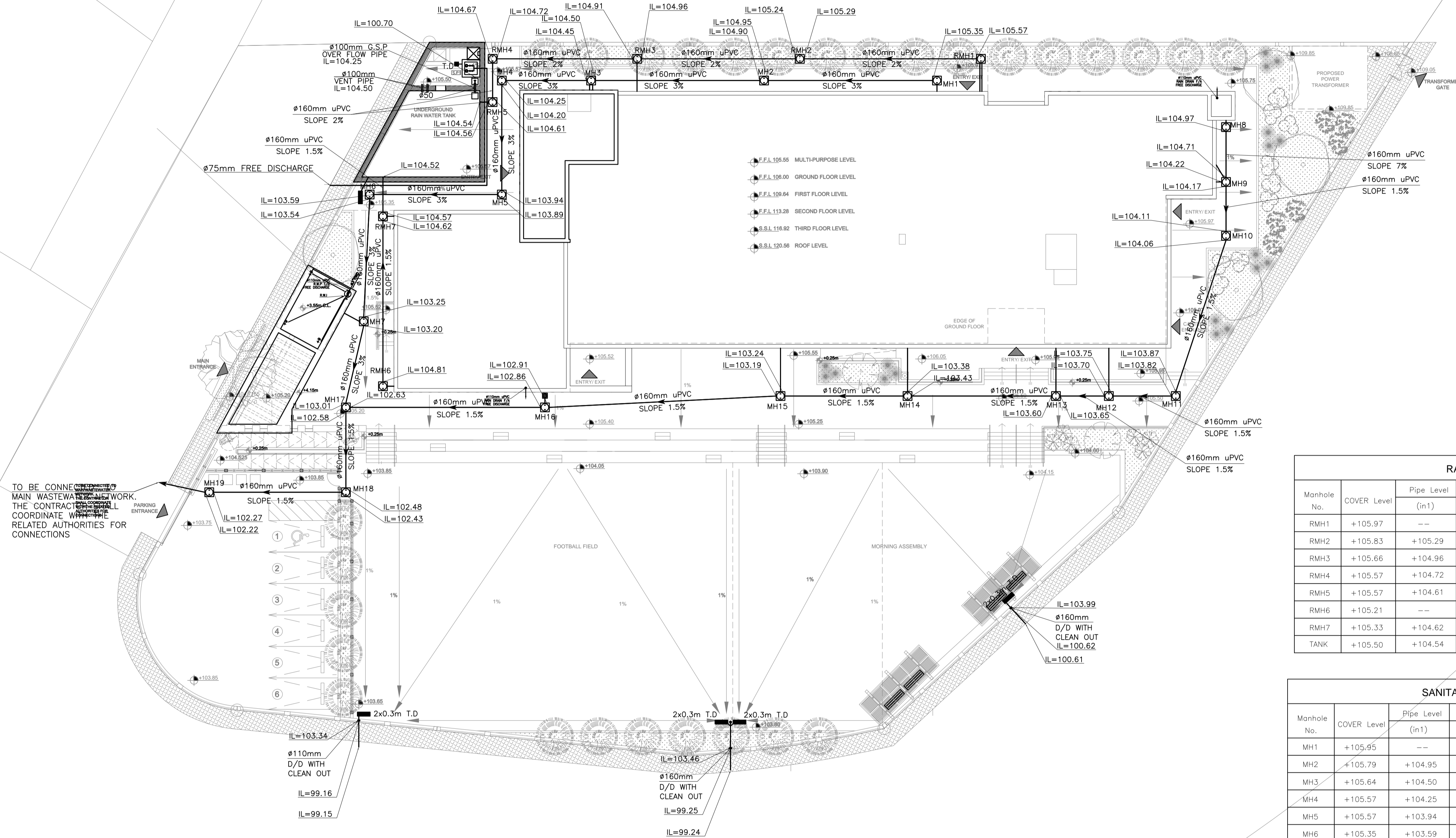
PHASE III	UM AL DANANIR BASIC MIXED (AMMAN)
PACKAGE 1	SCHOOLS FOR A KNOWLEDGE ECONOMY PROJECT (USAID SKEP)

DRAWING NAME: <b>GUARD ROOM MECHANICAL SYSTEM PLAN</b>		
DESIGN: E.J.	DRAWN: CAD	CHECKED: A.J.
SCALE: 1:50	DATE: June 2019	APPROVED: W.Z.
PLOT No: 568	LOCATION: UM AL DANANIR	BASIN NO: 002-ALGESHANEYEH
DRAWING NUMBER: <b>SKEP 13-GH100</b>		

North:	
Rev.:	0



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TO BE CONNECTED TO MAIN WASTEWATER NETWORK. THE CONTRACTOR SHALL COORDINATE WITH ALL RELATED AUTHORITIES FOR CONNECTIONS

- F.F.L 105.55 MULTI-PURPOSE LEVEL
- F.F.L 106.00 GROUND FLOOR LEVEL
- F.F.L 106.64 FIRST FLOOR LEVEL
- F.F.L 113.28 SECOND FLOOR LEVEL
- S.S.L 116.82 THIRD FLOOR LEVEL
- S.S.L 120.46 ROOF LEVEL

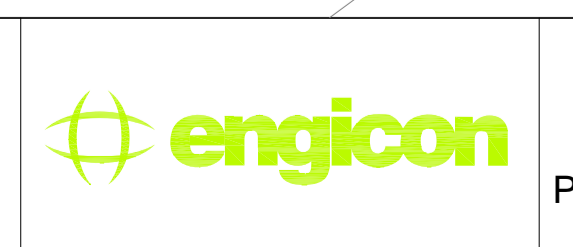
Manhole No.	COVER Level	Pipe Level (in1)	Pipe Level (in2)	Pipe Level Out	Depth (m)	Manhole Dim. (cm)	Cover Dim. (cm)	Cover
RMH1	+105.97	--	--	+105.57	0.40	60X60	ø60	M.D
RMH2	+105.83	+105.29	--	+105.24	0.59	60X60	ø60	M.D
RMH3	+105.66	+104.96	--	+104.91	0.75	60X60	ø60	M.D
RMH4	+105.57	+104.72	--	+104.67	0.90	60X60	ø60	M.D
RMH5	+105.57	+104.61	--	+104.56	1.01	60X60	ø60	M.D
RMH6	+105.21	--	--	+104.81	0.40	60X60	ø60	M.D
RMH7	+105.33	+104.62	--	+104.57	0.76	60X60	ø60	M.D
TANK	+105.50	+104.54	+104.52	--	0.98	--	--	--

Manhole No.	COVER Level	Pipe Level (in1)	Pipe Level (in2)	Pipe Level Out	Depth (m)	Manhole Dim. (cm)	Cover Dim. (cm)	Cover
MH1	+105.95	--	--	+105.35	0.60	60X60	ø60	M.D
MH2	+105.79	+104.95	--	+104.90	0.89	60X60	ø60	M.D
MH3	+105.64	+104.50	--	+104.45	1.19	60X60	ø60	M.D
MH4	+105.57	+104.25	--	+104.20	1.37	60X60	ø60	M.D
MH5	+105.57	+103.94	--	+103.89	1.68	ø90	ø60	M.D
MH6	+105.35	+103.59	--	+103.54	1.81	ø90	ø60	M.D
MH7	+105.26	+103.25	--	+103.20	2.06	ø90	ø60	M.D
MH8	+105.97	--	--	+104.97	1.00	60X60	ø60	M.D
MH9	+105.97	+104.22	+104.71	+104.17	1.80	ø90	ø60	M.D
MH10	+105.97	+104.11	--	+104.06	1.91	ø90	ø60	M.D
MH11	+105.50	+103.87	--	+103.82	1.68	ø90	ø60	M.D
MH12	+105.50	+103.75	--	+103.70	1.80	ø90	ø60	M.D
MH13	+105.50	+103.65	--	+103.60	1.90	ø90	ø60	M.D
MH14	+105.50	+103.43	--	+103.38	2.12	ø90	ø60	M.D
MH15	+105.39	+103.24	--	+103.19	2.20	ø90	ø60	M.D
MH16	+105.39	+102.91	--	+102.86	2.53	ø90	ø60	M.D
MH17	+105.20	+103.01	+102.63	+102.58	2.62	ø90	ø60	M.D
MH18	+103.85	+102.48	--	+102.43	1.42	60X60	ø60	M.D
MH19	+103.75	+102.27	--	+102.22	1.53	ø90	ø60	H.D

PUMP REF.	SERVED AREA	LOCATION	TYPE	FLOW RATE L/S	OPERATING HEAD (M)	ELECTRICAL DATA	QUANTITY
S.P1	PUMP ROOM	SUMP PIT	SUBMERSIBLE	1.3	10	0.5 230 1 1450 1 1	1

REV.	DATE	REMARKS
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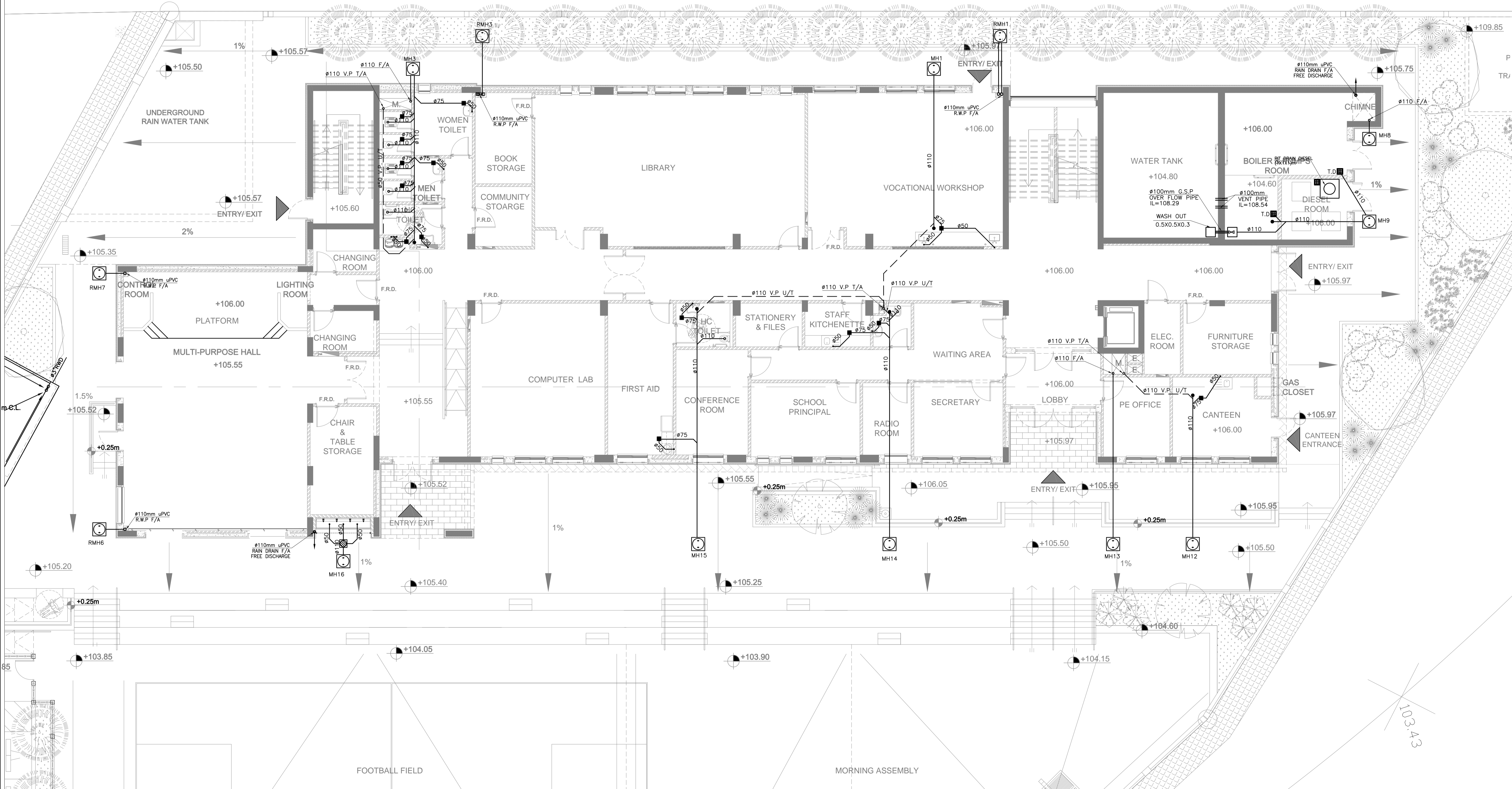
PHASE III  
PACKAGE 2  
Thahr Al Sarow Basic School For Boys (Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY PROJECT (USAID SKEP)

DRAWING NAME: SITE LIGHTING PLAN DRAINAGE SYSTEM PLAN  
 Design: S.H. Drawn: CAD Checked: A.J. North:   
 SCALE: 1:200 Date: JUNE 2019 Approved: W.Z.  
 DRAWING NUMBER: SKEP 14-PD100  
 PLOT No: 435 LOCATION: Thahr Al Sarow BASIN NO: 4 Dair Alliat  
 Rev: 0



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PHASE III  
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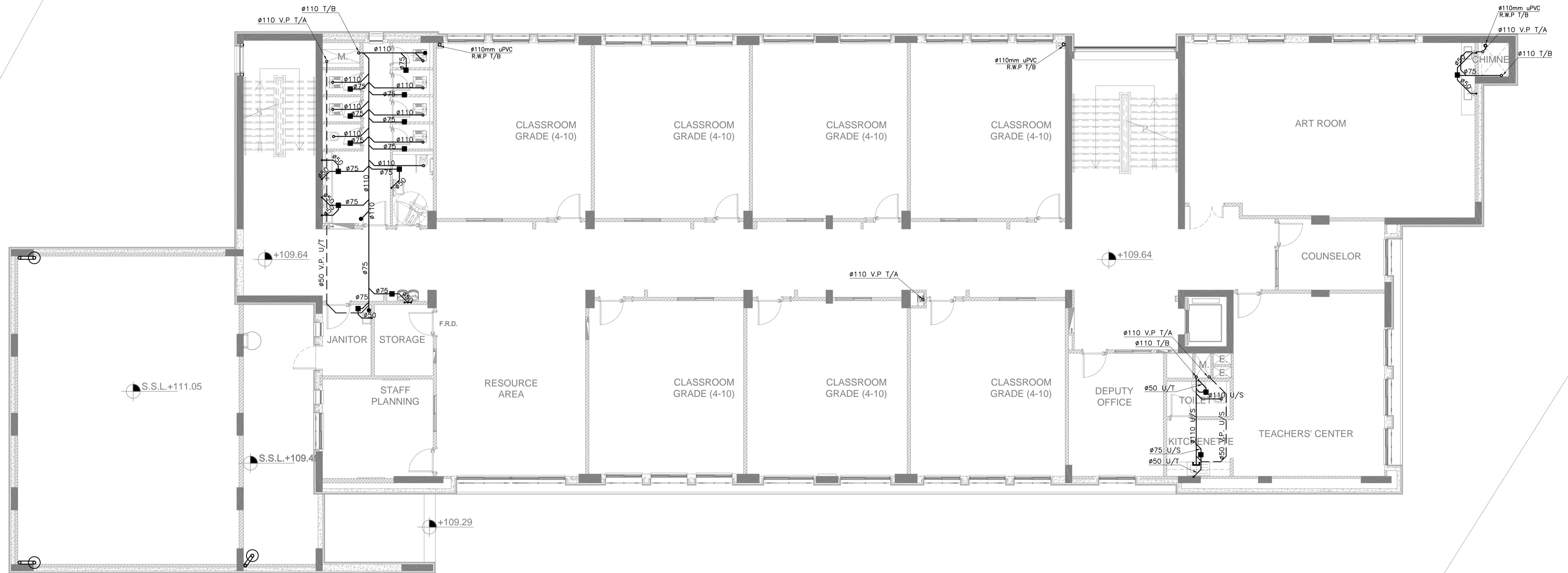
Thahr Al Sarow Basic School For Boys  
 (Jerash)  
 SCHOOLS FOR A KNOWLEDGE ECONOMY  
 PROJECT (USAID SKEP)

DRAWING NAME:  
 GROUND FLOOR PLAN  
 DRAINAGE SYSTEM

Design: S.H.	Drawn: CAD	Checked: A.J.	North: 
SCALE: 1:100	Date: JUNE 2019	Approved: W.Z.	Rev.: 0
DRAWING NUMBER: SKEP 14-PD101	LOCATION: Thahr Al Sarow	BASIN NO: 4 Dair Allait	



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Thahr Al Sarow Basic School For Boys  
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PROJECT (USAID SKEP)

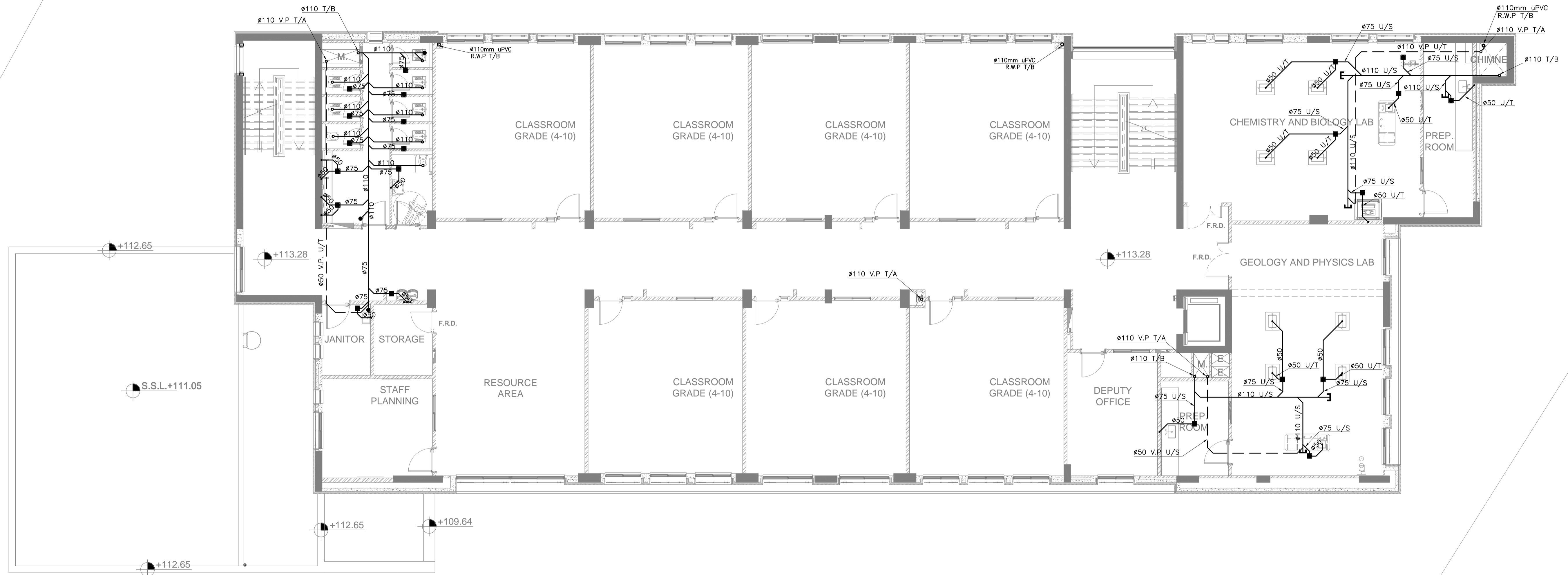
DRAWING NAME: <b>FIRST FLOOR PLAN DRAINAGE SYSTEM PLAN</b>		
DESIGN: S.H.	DRAWN: CAD	CHECKED: A.J.
SCALE: 1:100	DATE: JUNE 2019	APPROVED: W.Z.
PLOT No: 435	LOCATION: Thahr Al Sarow	BASIN NO: 4 Dair Alliat

DRAWING NUMBER: <b>SKEP 14-PD102</b>	
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Rev.: 0
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PHASE III  
PACKAGE 2

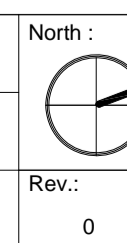
Thahr Al Sarow Basic School For Boys  
(Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY  
PROJECT (USAID SKEP)

DRAWING NAME:  
**SECOND FLOOR PLAN  
DRAINAGE SYSTEM PLAN**

DESIGNER: S.H.  
DRAWN: CAD  
CHECKED: A.J.  
SCALE: 1:100  
DATE: JUNE 2019  
APPROVED: W.Z.

DESIGNER: S.H.  
DRAWN: CAD  
CHECKED: A.J.  
SCALE: 1:100  
DATE: JUNE 2019  
APPROVED: W.Z.

DRAWING NUMBER:  
**SKEP 14-PD103**

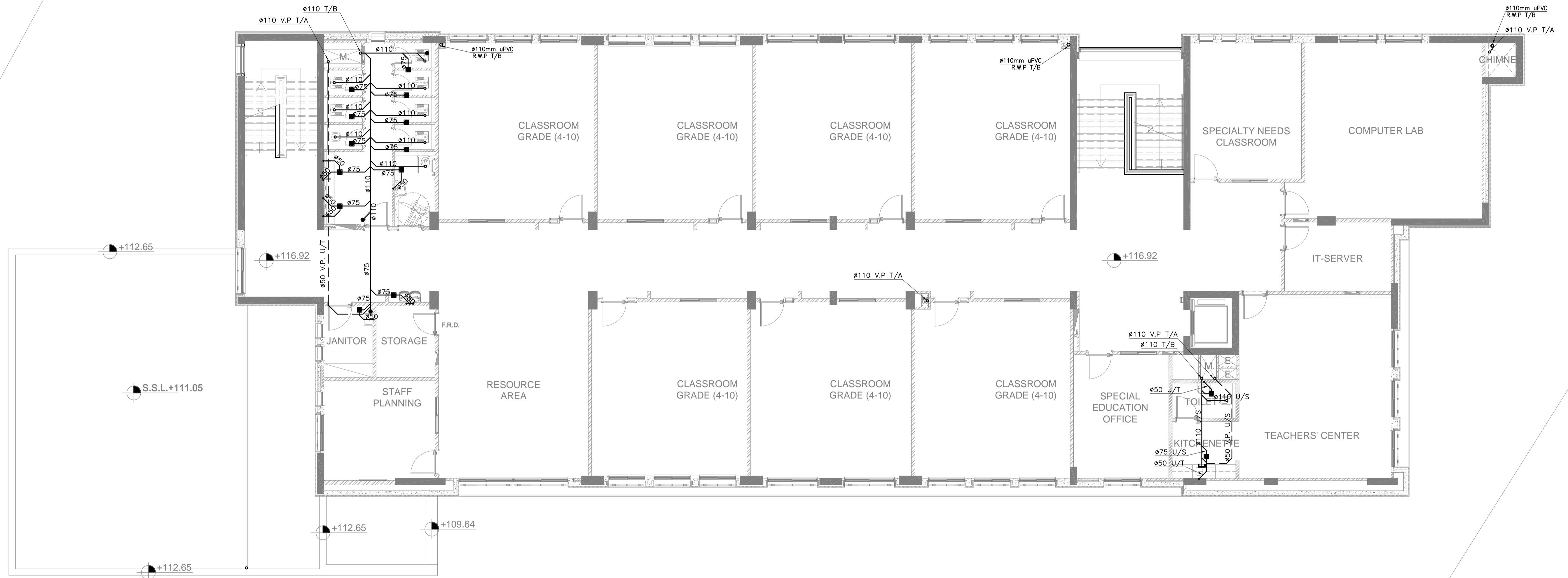


Rev.: 0

PLOT No	LOCATION	BASIN NO
435	Thahr Al Sarow	4 Dair Allait



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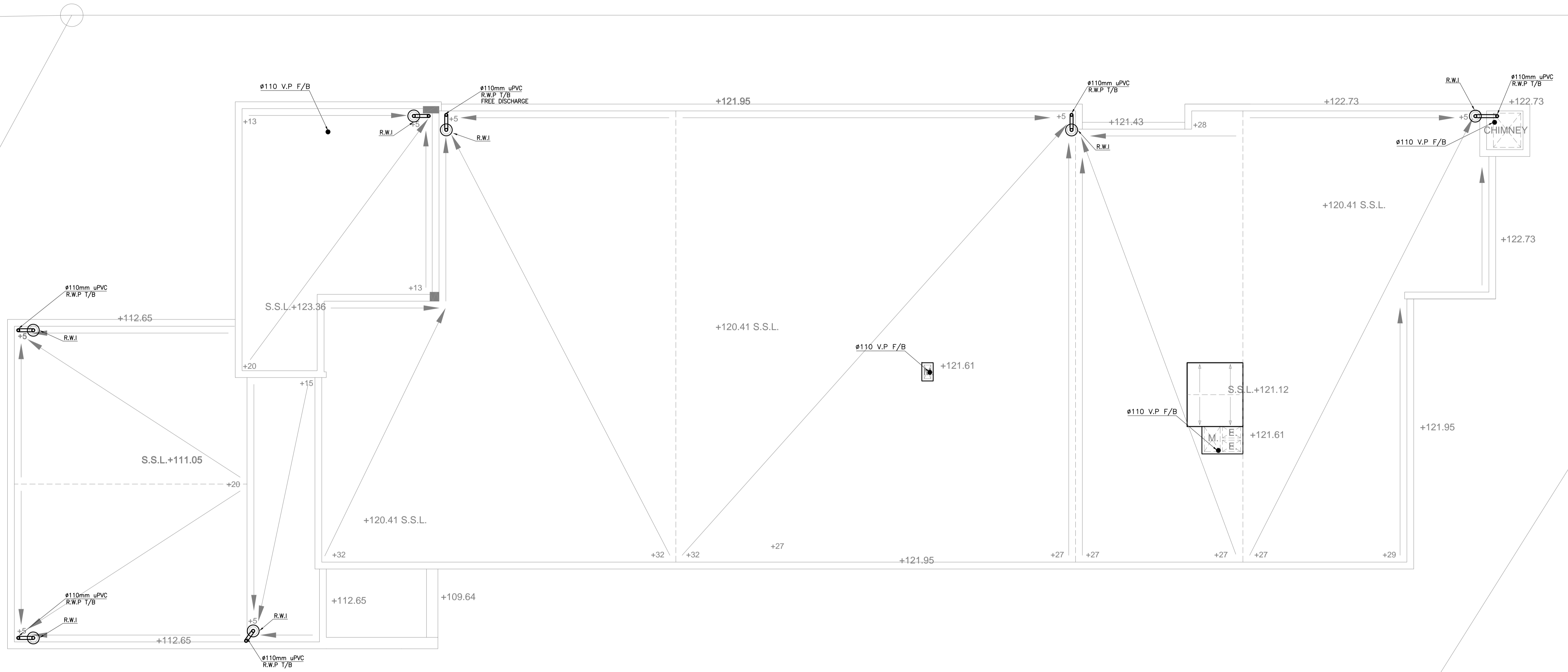
Thahr Al Sarow Basic School For Boys  
(Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY  
PROJECT (USAID SKEP)

DRAWING NAME: <b>THIRD FLOOR PLAN DRAINAGE SYSTEM PLAN</b>		
DESIGN: S.H.	DRAWN: CAD	CHECKED: A.J.
SCALE: 1:100	DATE: JUNE 2019	APPROVED: W.Z.
PLOT No: 435	LOCATION: Thahr Al Sarow	BASIN NO: 4 Dair Alliat

DESIGN: S.H.	DRAWN: CAD	CHECKED: A.J.	North:
SCALE: 1:100	DATE: JUNE 2019	APPROVED: W.Z.	
DRAWING NUMBER: <b>SKEP 14-PD104</b>			Rev.: 0



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PHASE III  
PACKAGE 2  
Thahr Al Sarow Basic School For Boys (Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY PROJECT (USAID SKEP)

DRAWING NAME:  
**ROOF FLOOR PLAN  
POWER PLAN**

Design: S.H.  
Scale: 1:100  
Date: JUNE 2019

Drawn: CAD  
Date: JUNE 2019

Checked: A.J.  
Approved: W.Z.

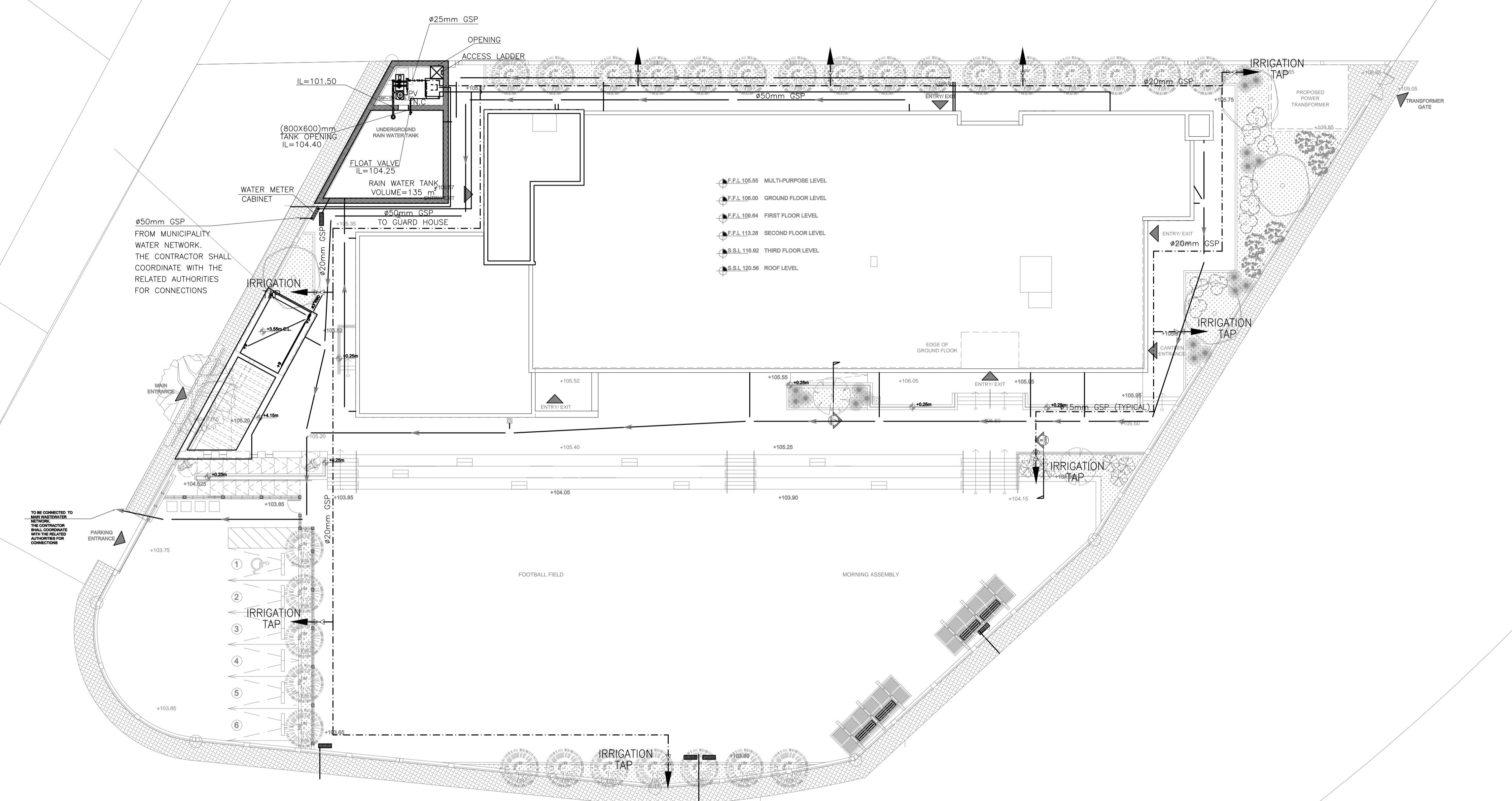
DRAWING NUMBER:  
**SKEP 14-PD105**

Plot No: 435  
Location: Thahr Al Sarow  
Basin No: 4 Dair Alliat

Design: S.H.	Drawn: CAD	Checked: A.J.	North:
Scale: 1:100	Date: JUNE 2019	Approved: W.Z.	Rev.: 0



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REF.NO	CAPACITY (L)	KW	TYPE	POWER SUPPLY	QTY
E.W.H.	50	1.2	VERTICAL	240/1/50	11

PUMP REF.	LOCATION	TYPE	FLOW RATE (m³/h)	OPERATING HEAD (M)	SPEED CONTROL	ELECTRICAL DATA				QUANTITY	
						Estim. Kw	V	Phase	RPM	Duty	Stand By
DCWP-1	PUMP ROOM	MULTISTAGE CENTRIFUGAL BOOSTER PUMP SET WITH 200L PRESSURE VESSEL	8	30	CONSTANT SPEED	1.5	400	3	2900	1	1
B.P-1	ROOF FLOOR	MULTISTAGE CENTRIFUGAL BOOSTER PUMP SET WITH 200L PRESSURE/VESEL	17 (TOTAL)	20	VARIABLE SPEED	2.3	400	3	2900	1	1
IRP-1	PUMP ROOM	MULTISTAGE CENTRIFUGAL BOOSTER PUMP SET WITH 200L PRESSURE VESSEL	2.0	20	CONSTANT	0.5	230	1	2900	1	1

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Thahr Al Sarow Basic School For Boys  
(Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY  
PROJECT (USAID SKEP)

DRAWING NAME:  
**SITE PLAN  
WATER DISTRIBUTION SYSTEM PLAN**

SCALE:  
1:200

DATE:  
JUNE 2019

DRAWING NUMBER:  
**SKEP 14-PW100**

Design:	Drawn:	Checked:	North:
S.H.	CAD	A.J.	
Date:	JUNE 2019	Approved:	
		W.Z.	

Rev.: 0

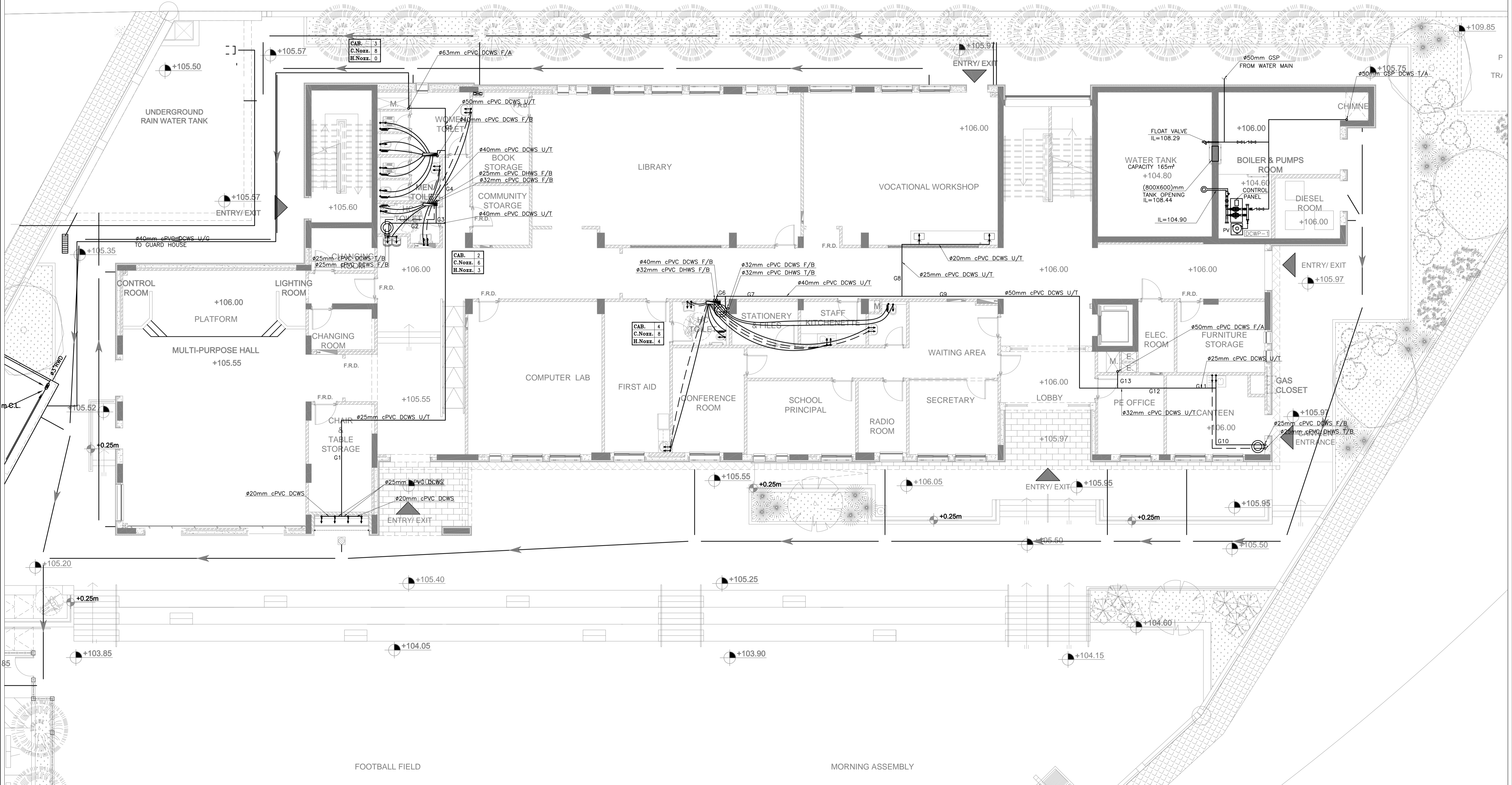


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CABINET REF. NO	TOTAL		MANIFOLD SIZE		CABINETS' SIZE (cm)	QTY.
	CW	HW	CW	HW		
CAB 2	6	3	ø32 (5/4")	ø20 (3/4")	60X60X10	1
CAB 3*	8	-	ø32 (5/4")	-	60X60X10	1
CAB 4	8	4	ø32 (5/4")	ø25 (1")	80X60X10	1

CW : COLD WATER OUTLET  
HW : HOT WATER OUTLET

\* : TWO COLD WATER MANIFOLDS



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PACKAGE 2

Tahr Al Sarow Basic School For Boys  
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SCHOOLS FOR A KNOWLEDGE ECONOMY  
PROJECT (USAID SKEP)

DRAWING NAME:  
**GROUND FLOOR PLAN  
WATER DISTRIBUTION SYSTEM PLAN**

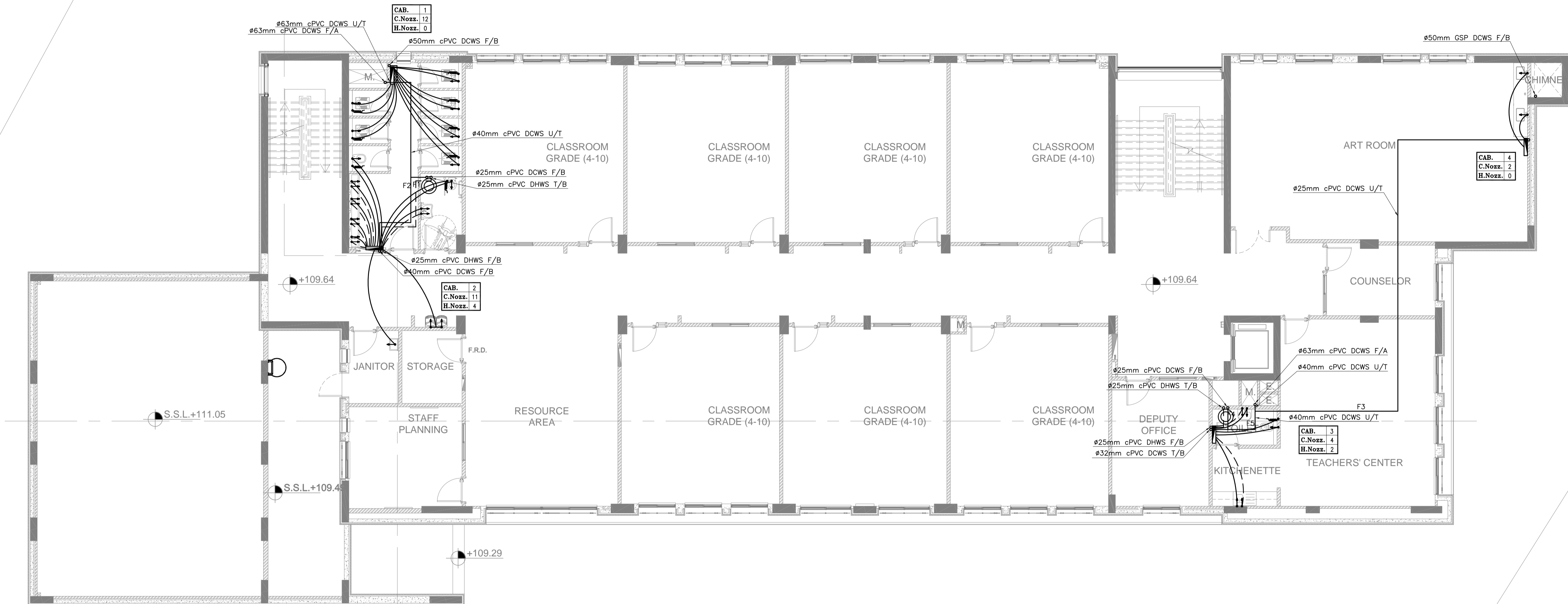
DESIGN: S.H.  
SCALE: 1:100  
DATE: JUNE 2019

DRAWING NUMBER:  
**SKEP 14-PW101**

Design:	Drawn:	Checked:	North:
S.H.	CAD	A.J.	
DATE:	DATE:	APPROVED:	
JUNE 2019	JUNE 2019	W.Z.	Rev.: 0



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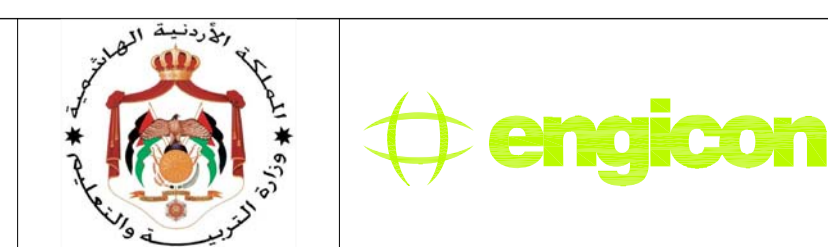
WATER DISTRIBUTION CABINETS SCHEDULE						
CABINET REF. NO	TOTAL		MANIFOLD SIZE		CABINETS' SIZE (cm)	QTY.
	CW	HW	CW	HW		
CAB 1*	12	-	ø32 (5/4")	-	60X60X10	1
CAB 2	11	4	ø32 (5/4")	ø25 (1")	100X60X10	1
CAB 3	4	2	ø32 (5/4")	ø20 (3/4")	60X60X10	1
CAB 4	2	-	ø20 (3/4")	-	60X60X10	1

CW : COLD WATER OUTLET  
HW : HOT WATER OUTLET

\* : TWO COLD WATER MANIFOLDS

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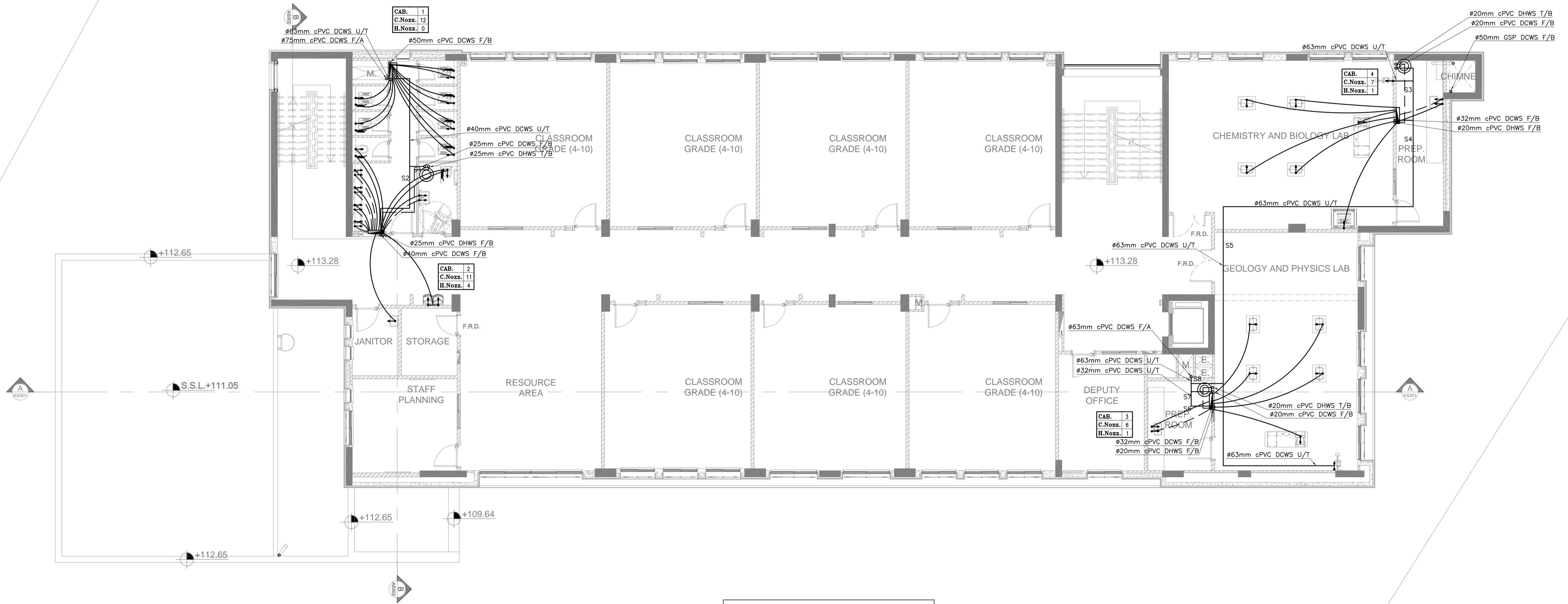
PHASE III  
PACKAGE 2  
Thahr Al Sarow Basic School For Boys (Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY PROJECT (USAID SKEP)

DRAWING NAME:  
FIRST FLOOR PLAN  
WATER DISTRIBUTION SYSTEM PLAN  
SCALE: 1:100  
DRAWING NUMBER: SKEP 14-PW102

Design: S.H.	Drawn: CAD	Checked: A.J.	North:
Date: JUNE 2019	Approved: W.Z.	Rev.: 0	



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WATER DISTRIBUTION CABINETS SCHEDULE						
CABINET REF. NO	TOTAL		MANIFOLD SIZE		CABINETS* SIZE (cm)	QTY.
	CW	HW	CW	HW		
CAB 1*	12	-	ø32 (5/4")	-	60X60X10	1
CAB 2	11	4	ø32 (5/4")	ø25 (1")	100X60X10	1
CAB 3	6	1	ø25 (1")	ø16 (1/2")	60X60X10	1
CAB 4	7	1	ø32 (5/4")	ø16 (1/2")	80X60X10	1

CW : COLD WATER OUTLET  
HW : HOT WATER OUTLET

\* : TWO COLD WATER MANIFOLDS

NOTES:



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PHASE III  
PACKAGE 2

Thahr Al Sarow Basic School For Boys  
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SCHOOLS FOR A KNOWLEDGE ECONOMY  
PROJECT (USAID SKEP)

DRAWING NAME:  
**SECOND FLOOR PLAN  
WATER DISTRIBUTION SYSTEM PLAN**

Design: S.H.  
SCALE: 1:100  
Date: JUNE 2019

Drawn: CAD  
Date: JUNE 2019

Checked: A.J.  
Approved: W.Z.

DRAWING NUMBER:  
**SKEP 14-PW103**

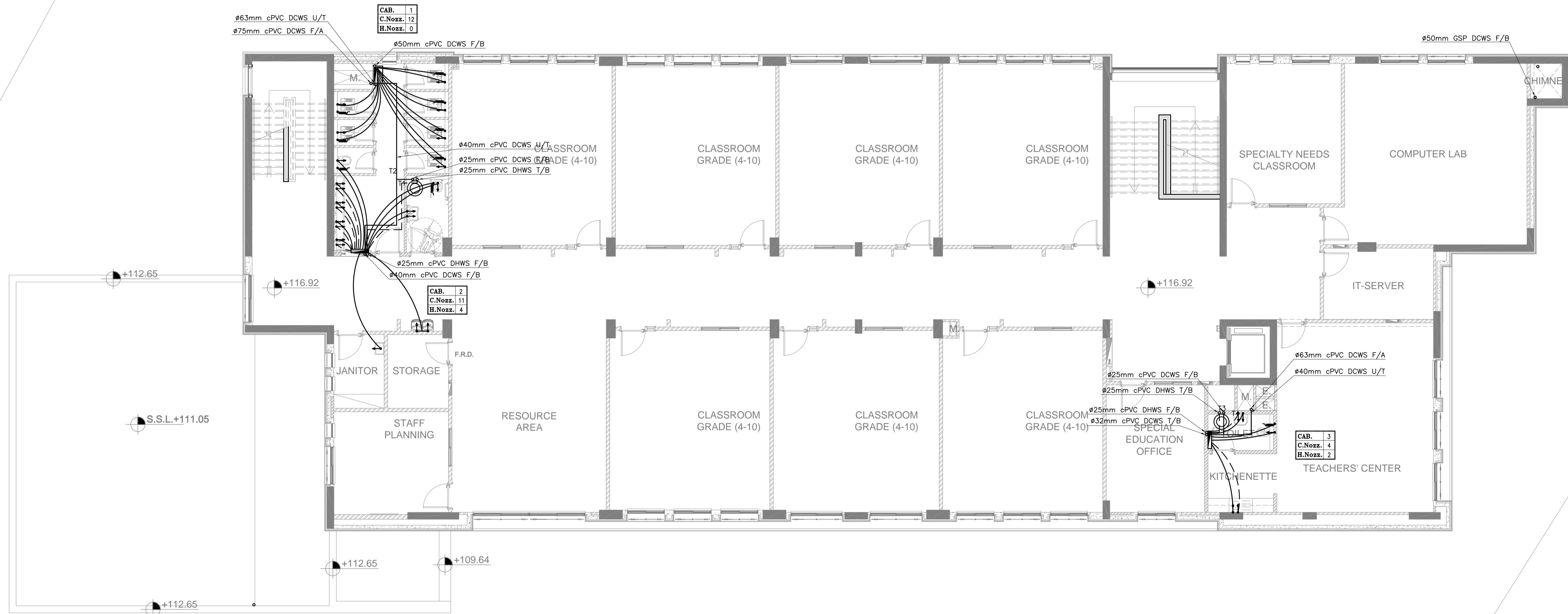
PLOT No: 435  
LOCATION: Thahr Al Sarow  
BASIN NO: 4 Dair Alliat

Rev.: 0

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**WATER DISTRIBUTION  
CABINETS SCHEDULE**

CABINET REF. NO	TOTAL		MANIFOLD SIZE		CABINETS' SIZE (cm)	QTY.
	CW	HW	CW	HW		
CAB 1*	12	-	ø32 (5/4")	-	60X60X10	1
CAB 2	11	4	ø32 (5/4")	ø25 (1")	100X60X10	1
CAB 3	4	2	ø32 (5/4")	ø25 (1")	60X60X10	1

CW : COLD WATER OUTLET  
HW : HOT WATER OUTLET

\* : TWO COLD WATER MANIFOLDS

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Thahr Al Sarow Basic School For Boys  
(Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY  
PROJECT (USAID SKEP)

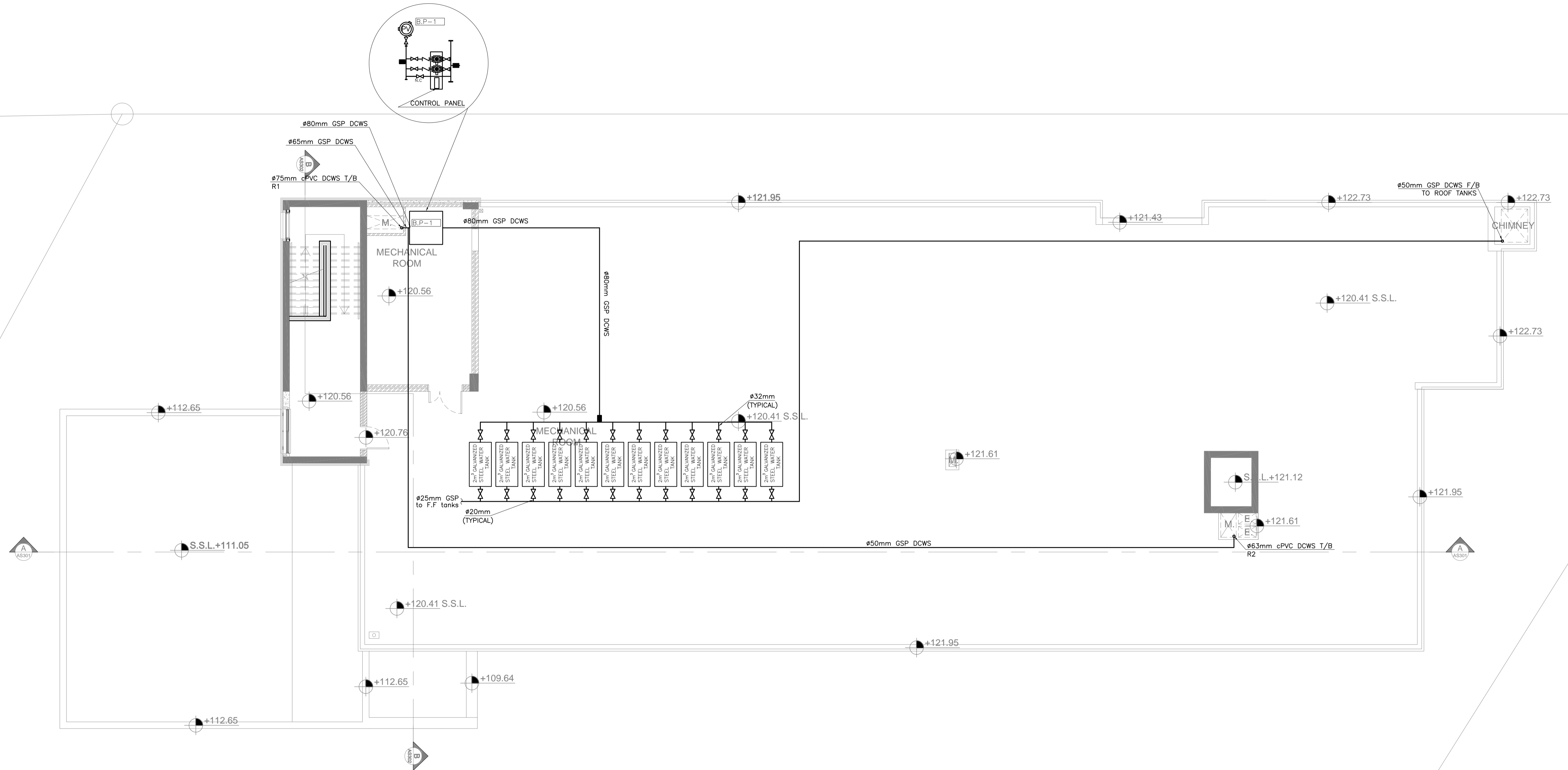
DRAWING NAME:  
**THIRD FLOOR PLAN  
WATER DISTRIBUTION SYSTEM PLAN**

DESIGN: S.H.  
SCALE: 1:100  
DRAWING NUMBER: SKEP 14-PW104

Design:	Drawn:	Checked:	North:
S.H.	CAD	A.J.	
Date:	Approved:	W.Z.	
JUNE 2019			
Rev.:			0

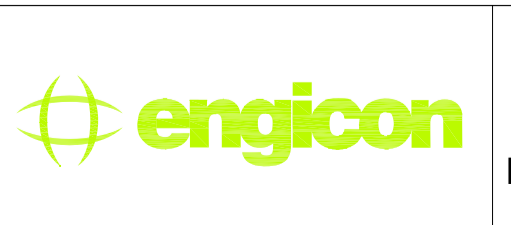


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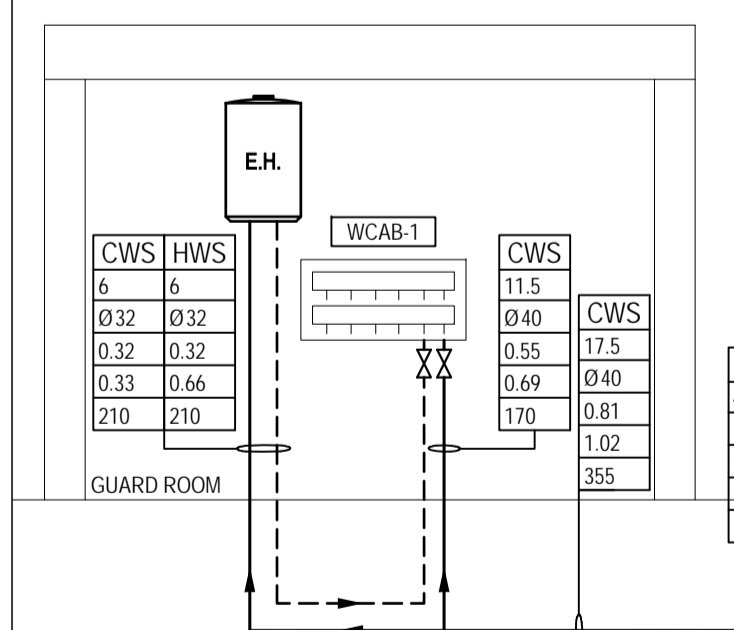
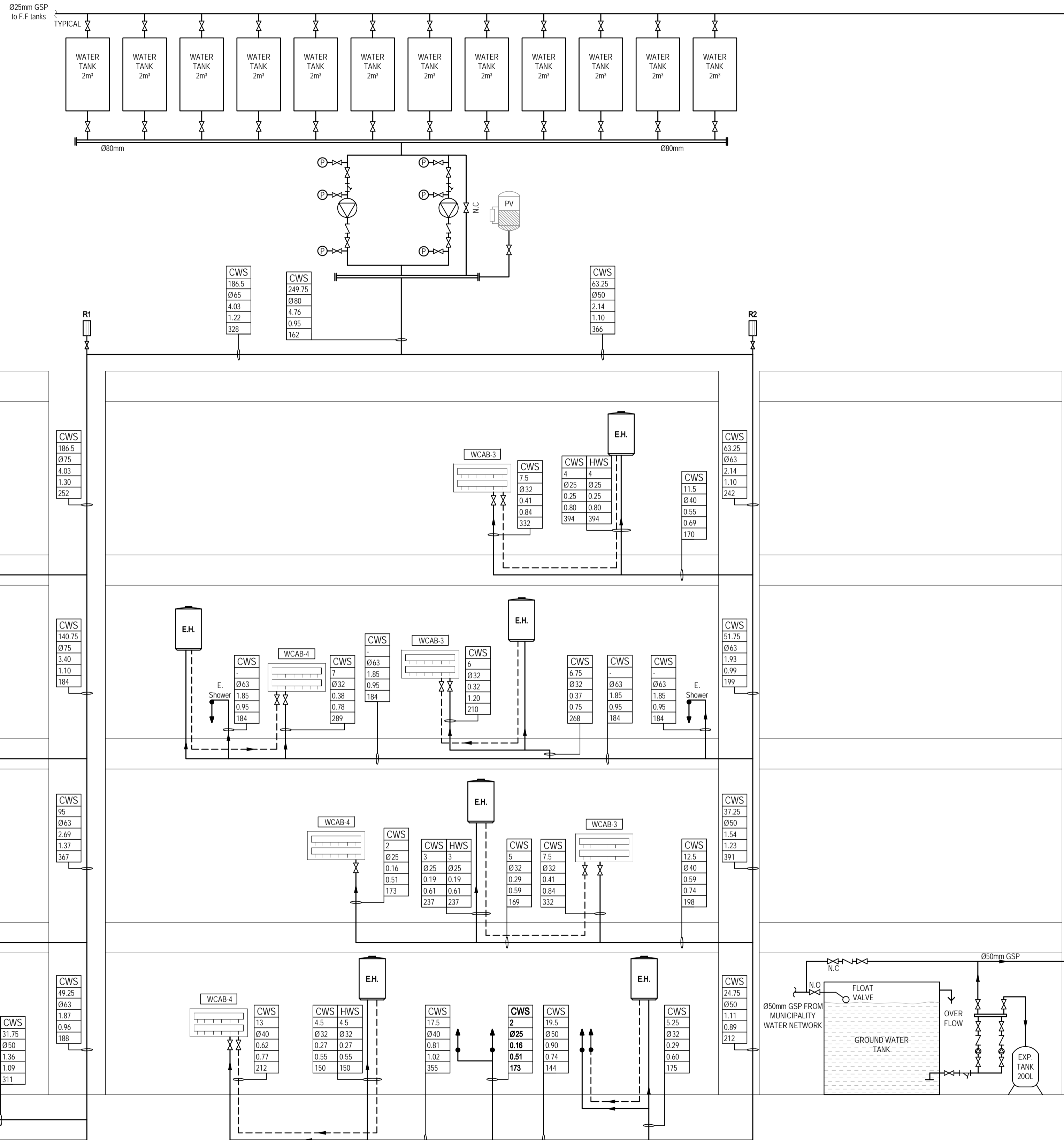
DRAWING NAME:  
ROOF FLOOR PLAN  
WATER DISTRIBUTION SYSTEM PLAN  
PLOT No 435  
LOCATION Thahr Al Sarow  
BASIN NO 4 Dair Alliat

Design: S.H.	Drawn: CAD	Checked: A.J.	North:
SCALE: 1:100	Date: JUNE 2019	Approved: W.Z.	
DRAWING NUMBER: SKEP 14-PW105			Rev.: 0



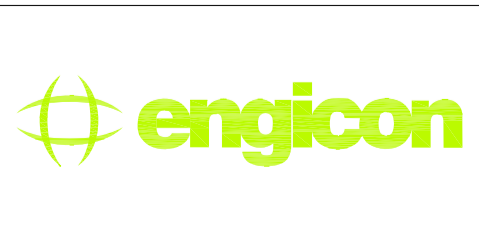
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CWS	HWS	WATER FIXTURE UNITS
6.75	6.75	
25	25	PIPE DIAMETER (mm)
0.3	0.3	WATER FLOW (L/s)
0.69	0.69	WATER VELOCITY (m/s)
352	352	WATER PRESSURE DROP (Pa/m)



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DRAWING NAME:  
WATER DISTRIBUTION SYSTEM RISER DIAGRAM  
PLOT No: 435  
LOCATION: Thahr Al Sarow  
BASIN NO: 4 Dair Alliat

Design: S.H.  
Scale: N.T.S.  
Date: JUNE 2019  
Checked: A.J.  
Approved: W.Z.  
Drawing Number: SKEP 14-PW601  
Rev.: 0



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**EXHAUST FANS SCHEDULE**

FAN REF.	SERVED AREA	LOCATION	TYPE	AIR CAP L/S	ESTIM. S.P. Pa	Estim. kW	ELECTRICAL DATA			QTY.
							V	Phase	RPM	
EX.F-1	GUARD HOUSE AND ELEC. ROOM TOILETS AND CANTEN	GROUND, 1st, 2nd and 3rd FLOOR	WALL/WINDOW MOUNTED	50	15	0.1	230	1	1290	12
EX.F-2	LABS	GROUND AND 2nd FLOOR	INLINE CENTRIFUGAL	280	25	0.3	230	1	1425	2
EX.F-3	TOILETS	1st, 2nd and 3rd FLOOR	WALL/WINDOW MOUNTED	295	25	0.3	230	1	1425	4
EX.F-4	TOILETS, STORAGE AND STAFF KITCHENETTE	GROUND FLOOR	INLINE CENTRIFUGAL	140	20	0.2	230	1	1425	1
EX.F-5	CHANGING ROOMS AND STORAGE	GROUND FLOOR	INLINE CENTRIFUGAL	235	25	0.3	230	1	1425	1
EX.F-6	TOILETS AND STORAGE	GROUND FLOOR	INLINE CENTRIFUGAL	245	25	0.3	230	1	1425	1

**NOTES:-**

- PROVIDE AUTOMATIC SHUTTER TO ALL FANS
- THE POWER CONSUMPTION IN (KW) IS BASED ON PRELIMINARY EQUIPMENT SELECTION.
- THE ACTUAL POWER CONSUMPTION AND NOMINAL RATING SHOULD BE VERIFIED BY THE CONTRACTOR BASED ON FINAL EQUIPMENT SELECTION.
- FINAL FANS STATIC PRESSURE SHALL BE VERIFIED AND RECALCULATED BY THE CONTRACTOR ACCORDING TO HIS APPROVED SHOP DRAWINGS AND MATERIALS

**SPLIT UNIT HEAT PUMP SCHEDULE**

REF.	TYPE	ON COIL TEMPERATURE DB / WB	NOMINAL COOLING CAPACITY (KW)		INPUT POWER (KW)	VOLT. (V)	PHASE (ø)	FREQ. (Hz)	QTY
			TOTAL	SENSIBLE					
SU-01	WALL MOUNTED	24.0/16.8	3.5	3.2	1.6	230	1	50	02
SU-02	WALL MOUNTED	24.0/16.8	5.3	4.5	2.4	230	1	50	09
SU-03	WALL MOUNTED	24.0/16.8	7.0	5.5	3.2	230	1	50	06
SU-04	CASSETTE	24.0/16.8	7.0	5.5	3.2	230	1	50	03

**SELECTION SHALL BE BASED ON:-**

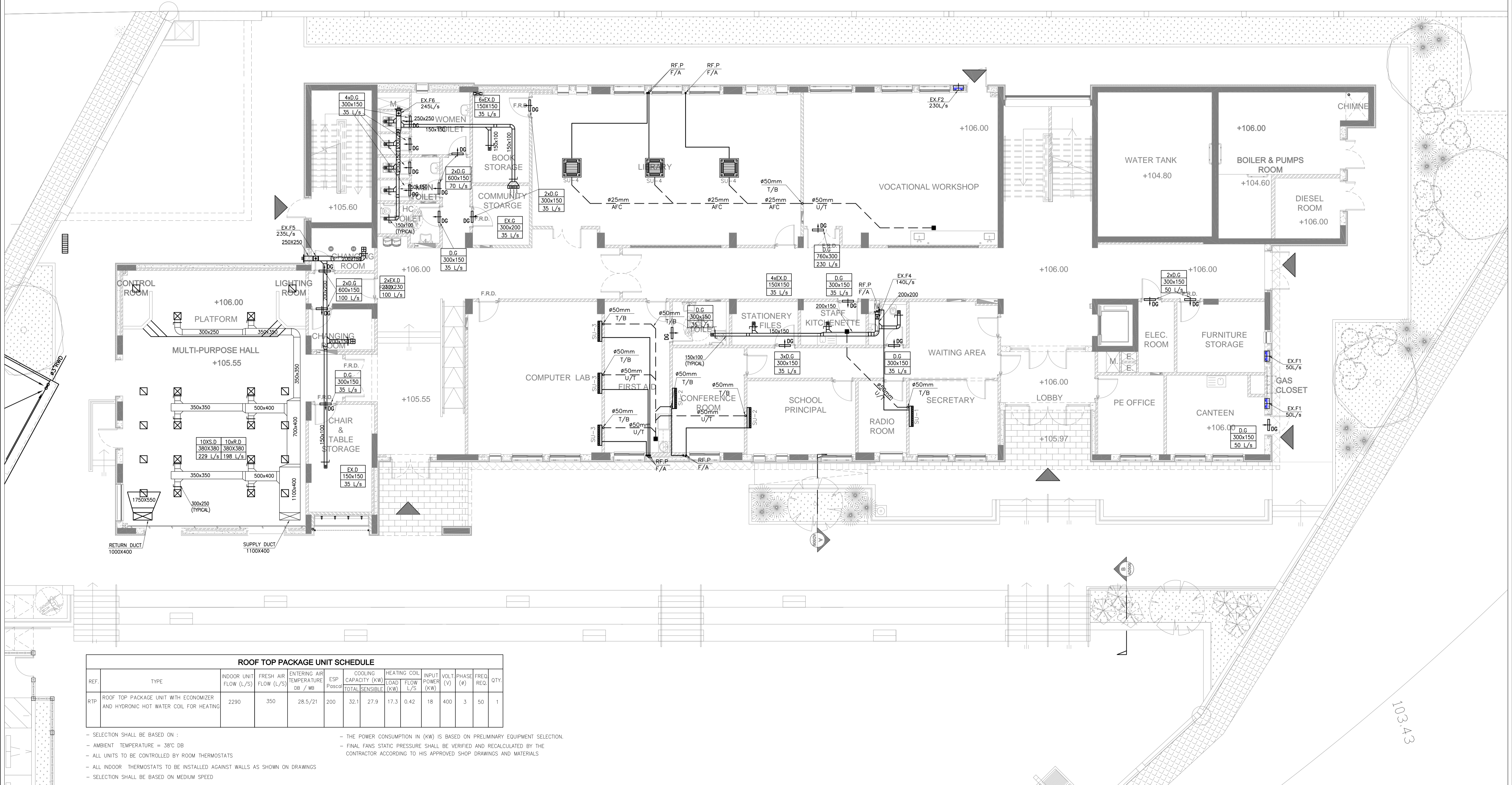
- AMBIENT TEMPERATURE (SUMMER) = 38°C DB
- AMBIENT TEMPERATURE (WINTER) = 0°C DB
- ALL UNITS TO BE CONTROLLED BY ROOM THERMOSTATS
- ALL INDOOR THERMOSTATS TO BE INSTALLED AGAINST WALLS AS SHOWN ON DRAWINGS
- SELECTION SHALL BE BASED ON MEDIUM SPEED

**SPLIT UNIT SCHEDULE**

REF.	LOCATION	TYPE	ON COIL TEMPERATURE DB / WB	NOMINAL COOLING CAPACITY (KW)		INPUT POWER (KW)	VOLT. (V)	PHASE (ø)	FREQ. (Hz)	QTY
				TOTAL	SENSIBLE					
SU-5	SERVER ROOM	WALL MOUNTED	24.0/16.8	3.5	3.2	1.6	230	1	50	01

**SELECTION SHALL BE BASED ON:-**

- AMBIENT TEMPERATURE (SUMMER) = 38°C DB
- AMBIENT TEMPERATURE (WINTER) = 0°C DB
- ALL UNITS TO BE CONTROLLED BY ROOM THERMOSTATS
- ALL INDOOR THERMOSTATS TO BE INSTALLED AGAINST WALLS AS SHOWN ON DRAWINGS
- SELECTION SHALL BE BASED ON MEDIUM SPEED



**ROOF TOP PACKAGE UNIT SCHEDULE**

REF.	TYPE	INDOOR UNIT FLOW (L/S)	FRESH AIR FLOW (L/S)	ENTERING AIR TEMPERATURE DB / WB	ESP Posco	COOLING CAPACITY (KW)		HEATING COIL LOAD (KW)	INPUT POWER (KW)	VOLT. (V)	PHASE (ø)	FREQ. (Hz)	QTY.	
						TOTAL	SENSIBLE							
RTP	ROOF TOP PACKAGE UNIT WITH ECONOMIZER AND HYDRONIC HOT WATER COIL FOR HEATING	2290	350	28.5/21	200	32.1	27.9	17.3	0.42	18	400	3	50	1

- SELECTION SHALL BE BASED ON:-
- AMBIENT TEMPERATURE = 38°C DB
- ALL UNITS TO BE CONTROLLED BY ROOM THERMOSTATS
- ALL INDOOR THERMOSTATS TO BE INSTALLED AGAINST WALLS AS SHOWN ON DRAWINGS
- SELECTION SHALL BE BASED ON MEDIUM SPEED
- THE POWER CONSUMPTION IN (KW) IS BASED ON PRELIMINARY EQUIPMENT SELECTION.
- FINAL FANS STATIC PRESSURE SHALL BE VERIFIED AND RECALCULATED BY THE CONTRACTOR ACCORDING TO HIS APPROVED SHOP DRAWINGS AND MATERIALS

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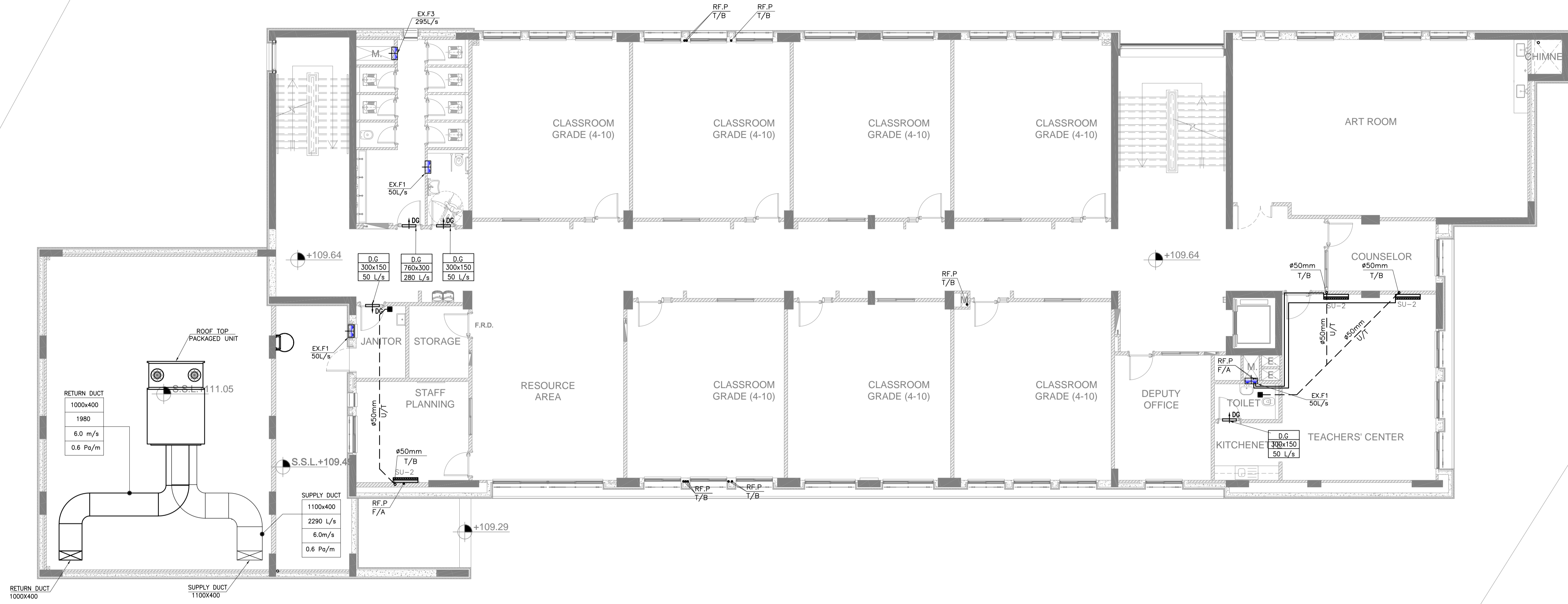
DRAWING NAME:  
**GROUND FLOOR PLAN  
HVAC DUCTING SYSTEM PLAN**

DESIGNER: S.H.  
SCALE: 1:100  
DRAWING NUMBER: SKEP 14-MH101

Design: S.H.  
Date: JUNE 2019  
Checked: A.J.  
Approved: W.Z.  
Rev: 0

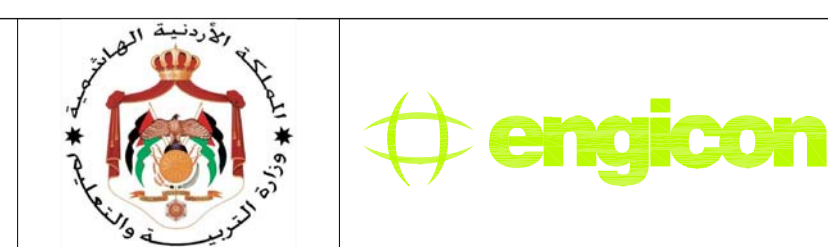


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DRAWING NAME:  
**FIRST FLOOR PLAN  
HVAC DUCTING SYSTEM PLAN**

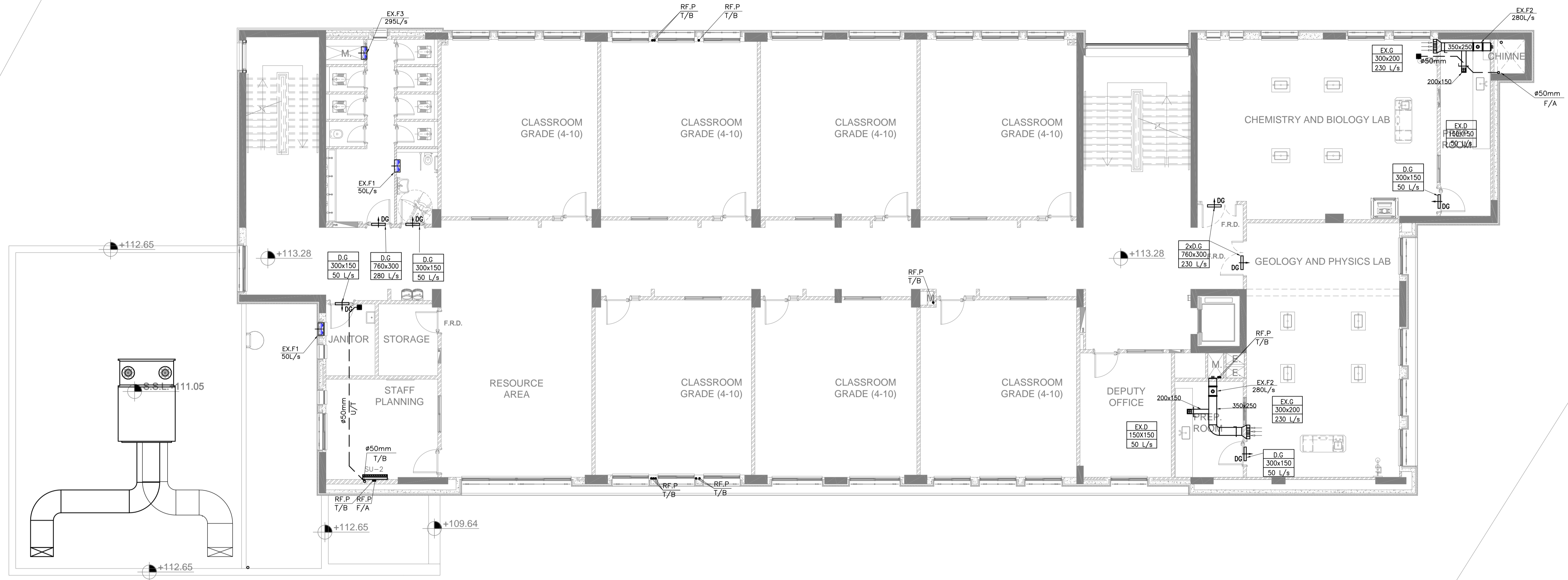
DESIGN: S.H.  
SCALE: 1:100  
DATE: JUNE 2019

DRAWING NUMBER: **SKEP 14-MH102**

Design: S.H.	Drawn: CAD	Checked: A.J.	North:
SCALE: 1:100	Date: JUNE 2019	Approved: W.Z.	
PLOT No: 435	LOCATION: Thahr Al Sarow	BASIN NO: 4 Dair Alliat	Rev.: 0

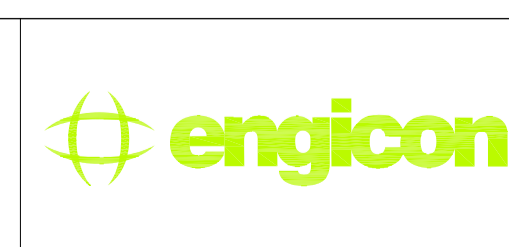


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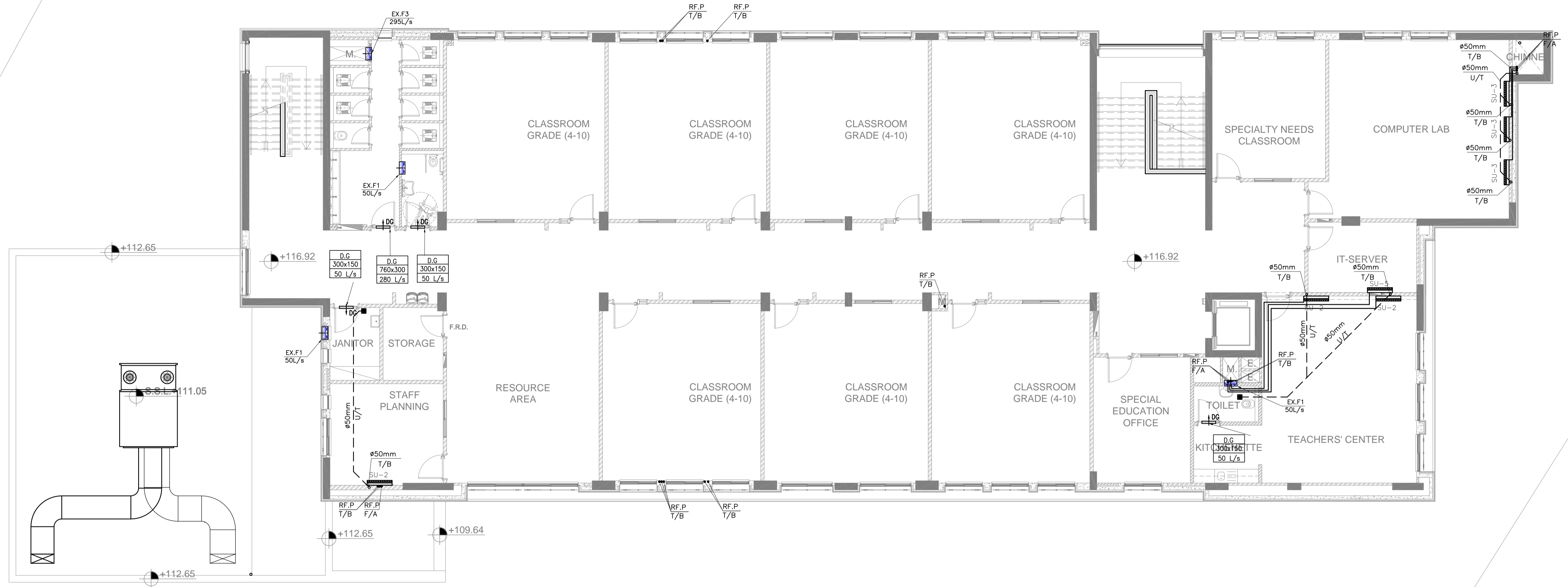
PHASE III  
PACKAGE 2  
Thahr Al Sarow Basic School For Boys (Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY PROJECT (USAID SKEP)

DRAWING NAME:  
**SECOND FLOOR PLAN  
HVAC DUCTING SYSTEM PLAN**

Design: S.H.	Drawn: CAD	Checked: A.J.	North:
SCALE: 1:100	Date: JUNE 2019	Approved: W.Z.	
PLOT No: 435	LOCATION: Thahr Al Sarow	BASIN NO: 4 Dair Alliat	DRAWING NUMBER: <b>SKEP 14-MH103</b>
			Rev.: 0

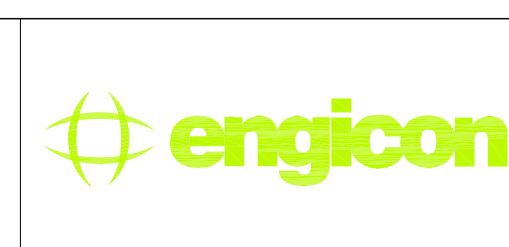


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DRAWING NAME:  
**THIRD FLOOR PLAN  
HVAC DUCTING SYSTEM PLAN**

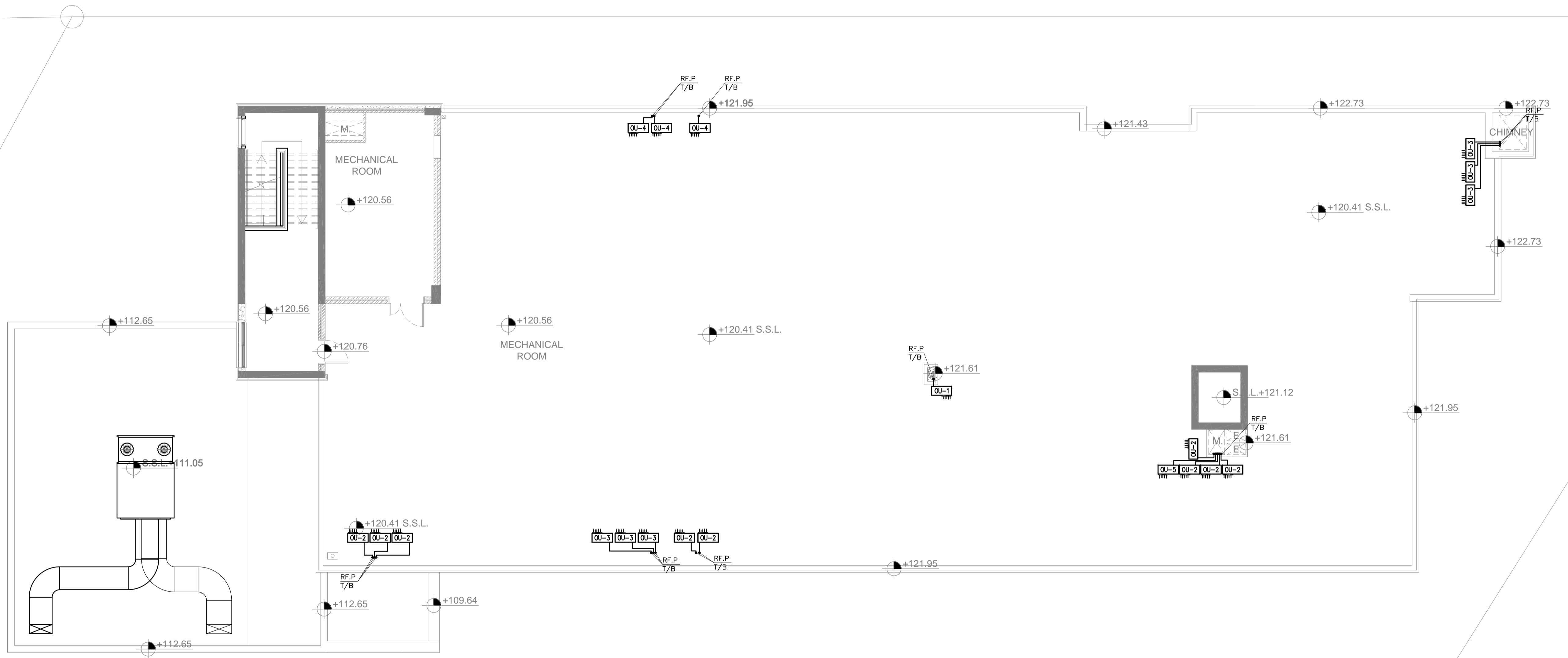
DESIGN: S.H.  
SCALE: 1:100  
DRAWING NUMBER: 435

LOCATION: Thahr Al Sarow  
BASIN NO: 4 Dair Alliat

Design: S.H.	Drawn: CAD	Checked: A.J.	North:
Date: JUNE 2019	Approved: W.Z.	Rev.: 0	

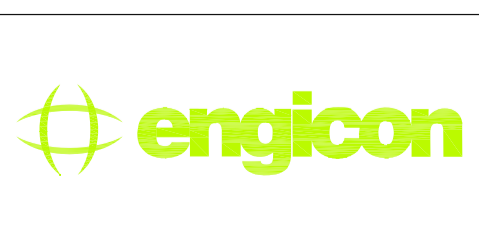


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DRAWING NAME:  
**ROOF FLOOR PLAN  
HVAC DUCTING SYSTEM PLAN**

DESIGN: S.H.  
SCALE: 1:100  
DATE: JUNE 2019

LOCATIONS: Thahr Al Sarow  
BASIN NO: 4 Dair Alliat

Design: S.H.	Drawn: CAD	Checked: A.J.	North:
SCALE: 1:100	Date: JUNE 2019	Approved: W.Z.	
DRAWING NUMBER: <b>SKEP 14-MH105</b>			Rev.: 0



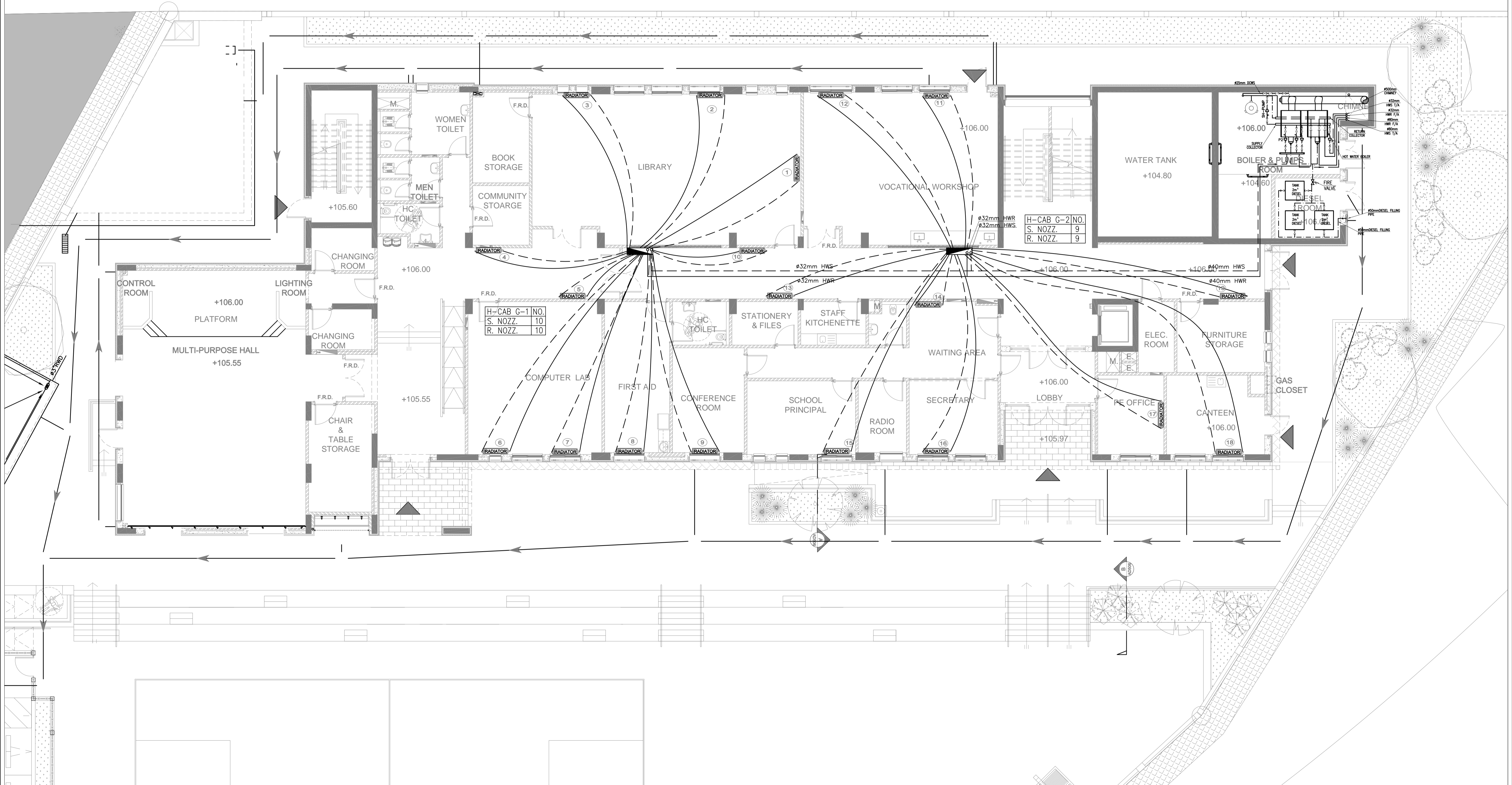
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HEATING CABINET : HC-G-01								
RAD. NO.	RAD. CAP. (W)	PIPES LENGTH (m)	LENGTH WITH RAD. (m)	RAD. FLOW RATE (l/s)	RAD. LOSS (kPa)	INNER DIAMETER (mm)	FLOW AFTER FR LOSS (l/s)	OPENING RATIO
1	2800	19.1	23.9	0.07	0.63	16	0.08	84%
2	2800	21.0	26.3	0.07	0.58	16	0.08	84%
3	2800	19.3	24.1	0.07	0.63	16	0.08	84%
4	2100	15.4	19.3	0.05	0.78	16	0.09	56%
5	2100	10.9	13.6	0.05	1.11	16	0.11	46%
6	2400	28.9	36.2	0.06	0.42	16	0.07	82%
7	2400	25.0	31.3	0.06	0.48	16	0.07	82%
8	2200	23.3	29.1	0.05	0.52	16	0.08	66%
9	2200	23.5	29.3	0.05	0.52	16	0.08	66%
10	2500	14.6	18.2	0.06	0.83	16	0.10	60%

HEATING CABINET : HC-G-02								
RAD. NO.	RAD. CAP. (W)	PIPES LENGTH (m)	LENGTH WITH RAD. (m)	RAD. FLOW RATE (l/s)	FR LOSS (kPa)	INNER DIAMETER (mm)	FLOW AFTER FR LOSS (l/s)	OPENING RATIO
11	3200	23.4	29.3	0.08	0.52	16	0.08	96%
12	3200	28.5	35.6	0.08	0.42	20	0.14	55%
13	2500	26.3	32.9	0.06	0.46	20	0.15	40%
14	3500	5.0	6.3	0.08	2.40	16	0.17	49%
15	2800	25.0	31.3	0.07	0.48	16	0.07	96%
16	2800	20.3	25.4	0.07	0.59	16	0.08	84%
17	1800	26.0	32.5	0.04	0.46	16	0.07	61%
18	2700	37.5	46.9	0.06	0.32	20	0.12	54%
19	4100	27.0	33.8	0.10	0.45	20	0.15	65%

108.00

109.00



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PROJECT (USAID SKEP)

DRAWING NAME:  
**GROUND FLOOR PLAN  
HVAC PIPING SYSTEM PLAN**

DESIGN: S.H.  
SCALE: 1:100  
DRAWING NUMBER: SKPE 14-MP101

Design: S.H.	Drawn: CAD	Checked: A.J.	North:
Date: JUNE 2019	Approved: W.Z.	Rev.: 0	

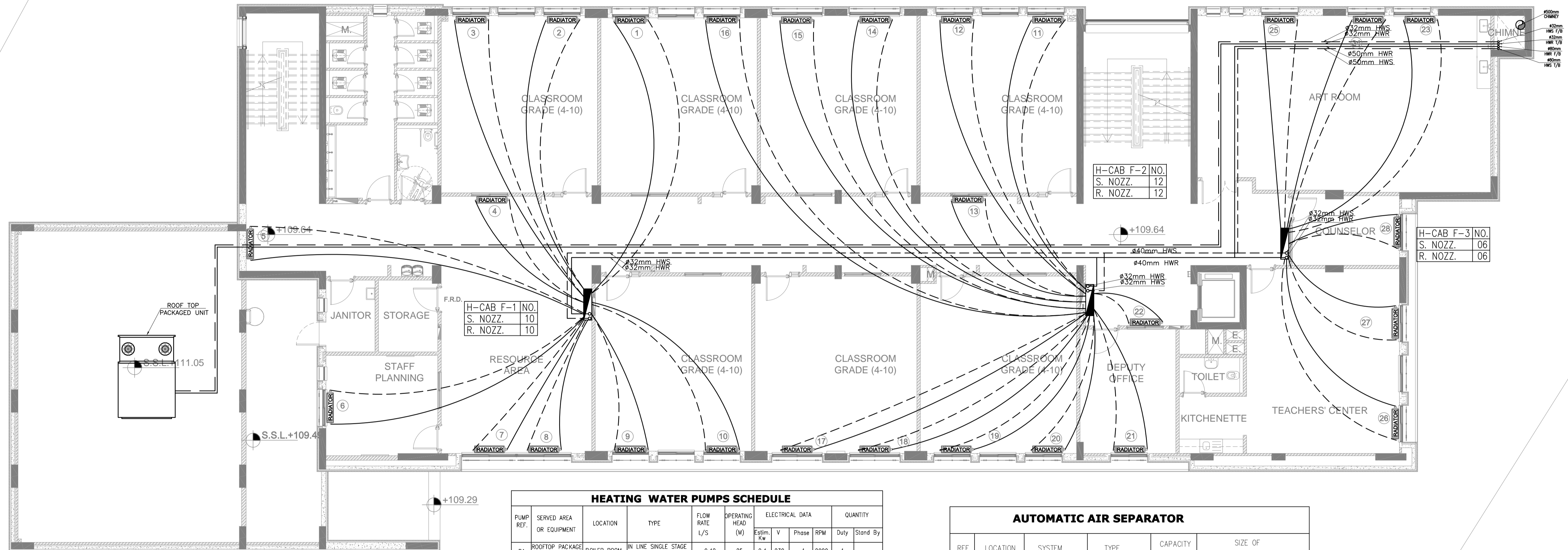


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HEATING CABINET : HC-F-03								
RAD. NO.	RAD. CAP. (W)	PIPES LENGTH (m)	LENGTH WITH RAD. (m)	RAD. FLOW RATE (l/s)	FR.LOSS (kpa)	INNER DIAMETER (mm)	FLOW AFTER FR.LOSS (l/s)	OPENING RATIO
23	2700	27.5	34.3	0.06	0.44	16	0.07	92%
24	2700	22.3	27.8	0.06	0.54	16	0.08	81%
25	2700	22.4	28.0	0.06	0.54	16	0.08	81%
26	3000	22.5	28.1	0.07	0.54	16	0.08	90%
27	3000	14.8	18.5	0.07	0.82	16	0.10	72%
28	1300	11.8	14.8	0.03	1.02	16	0.11	28%

HEATING CABINET : HC-F-02								
RAD. NO.	RAD. CAP. (W)	PIPES LENGTH (m)	LENGTH WITH RAD. (m)	RAD. FLOW RATE (l/s)	FR.LOSS (kpa)	INNER DIAMETER (mm)	FLOW AFTER FR.LOSS (l/s)	OPENING RATIO
10	2400	28.1	35.1	0.06	0.43	16	0.07	82%
12	2400	29.1	36.4	0.06	0.42	16	0.07	82%
13	3100	15.6	19.6	0.07	0.77	16	0.09	82%
14	1800	37.6	47.0	0.04	0.32	16	0.06	72%
15	1800	40.9	51.2	0.04	0.30	16	0.06	72%
16	2000	47.0	58.8	0.05	0.26	16	0.05	96%
17	2000	31.4	39.3	0.05	0.38	16	0.06	80%
18	2000	25.6	32.0	0.05	0.47	16	0.07	68%
19	2000	20.4	25.6	0.05	0.59	16	0.08	60%
20	2000	15.5	19.4	0.05	0.78	16	0.09	53%
21	1900	14.7	18.4	0.05	0.82	16	0.10	45%
22	3300	6.3	7.9	0.08	1.91	16	0.15	53%

HEATING CABINET : HC-F-01								
RAD. NO.	RAD. CAP. (W)	PIPES LENGTH (m)	LENGTH WITH RAD. (m)	RAD. FLOW RATE (l/s)	FR.LOSS (kpa)	INNER DIAMETER (mm)	FLOW AFTER FR.LOSS (l/s)	OPENING RATIO
1	2000	29.0	36.3	0.05	0.42	16	0.07	68%
2	2000	27.1	33.9	0.05	0.45	16	0.07	68%
3	2000	28.2	35.3	0.05	0.43	16	0.07	68%
4	2800	13.7	17.1	0.07	0.88	16	0.10	67%
5	2800	32.5	40.6	0.07	0.37	20	0.13	51%
6	2400	25.9	32.4	0.06	0.47	16	0.07	82%
7	2800	17.1	21.4	0.07	0.71	16	0.09	74%
8	2800	14.5	18.2	0.07	0.83	16	0.10	67%
9	2000	14.4	18.0	0.05	0.84	16	0.10	48%
10	2000	19.4	24.2	0.05	0.62	16	0.08	60%



HEATING WATER PUMPS SCHEDULE										
PUMP REF.	SERVED AREA OR EQUIPMENT	LOCATION	TYPE	FLOW RATE (L/S)	OPERATING HEAD (M)	ELECTRICAL DATA			QUANTITY	
				Estim. Kw	V	Phase	RPM	Duty	Stand By	
P1	ROOFTOP PACKAGE UNIT	BOILER ROOM	IN LINE SINGLE STAGE CENTRIFUGAL	0.42	25	0.4	230	1	2900	1
P2	RADIATORS	BOILER ROOM	IN LINE SINGLE STAGE CENTRIFUGAL	3.0 (EACH)	15	1.5	400	3	2900	2
SH PUMP	BOILERS	BOILER ROOM	IN LINE SINGLE STAGE CENTRIFUGAL	0.26	3	0.15	230	1	1450	1

NOTES:-  
- THE POWER CONSUMPTION IN (KW) IS BASED ON PRELIMINARY EQUIPMENT SELECTION.  
- FINAL PUMPS OPERATING HEAD SHALL BE VERIFIED AND RECALCULATED BY THE CONTRACTOR ACCORDING TO HIS APPROVED SHOP DRAWINGS AND MATERIALS.

HEATING BOILER SCHEDULE					
DESIGNATION	TITLE	LOCATION	DESCRIPTION	QUANTITY	DUTY
HWB	HEATING BOILER	BOILER ROOM	- SECTIONAL TYPE COMPLETE WITH INSULATED JACKET - CAPACITY = 180 KW - MAX. OPERATING PRESSURE = 6 Bar - FUEL : LIGHT OIL CLASS 2.	2	2

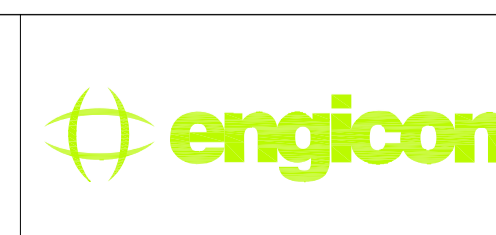
AUTOMATIC AIR SEPARATOR					
REF.	LOCATION	SYSTEM	TYPE	CAPACITY FLOW (L/S)	SIZE OF TANGENTIAL OPENINGS
AAS	BOILER ROOM	HEATING WATER	CENTRIFUGAL TYPE AIR SEPARATOR	6.5	3" FLANGED OR GROOVED

ELECTRONIC ANTI-SCALE UNIT									
REF.	PIPE DIAMETER (mm)	CAPACITY (L/S)	VOLTAGE (VOLT)	ABSORBED POWER (WATT)	FREQUENCY RANGE (kHz)	REQUIRED SPACE (mm)	SYSTEM	LOCATION	QUANTITY
(A.S)	80	6.5	24	3	3-32	500	DOMESTIC COLD WATER SYSTEM	BOILER ROOM	1

EXPANSION VESSELS SCHEDULE		
REFERENCE		EX.VI
NUMBER REQUIRED		1
LOCATION		BOILER ROOM
SYSTEM		HEATING WATER SYSTEM
MAXIMUM OPERATING PRESSURE	bar	6
CAPACITY	LITER	200

NOTES:

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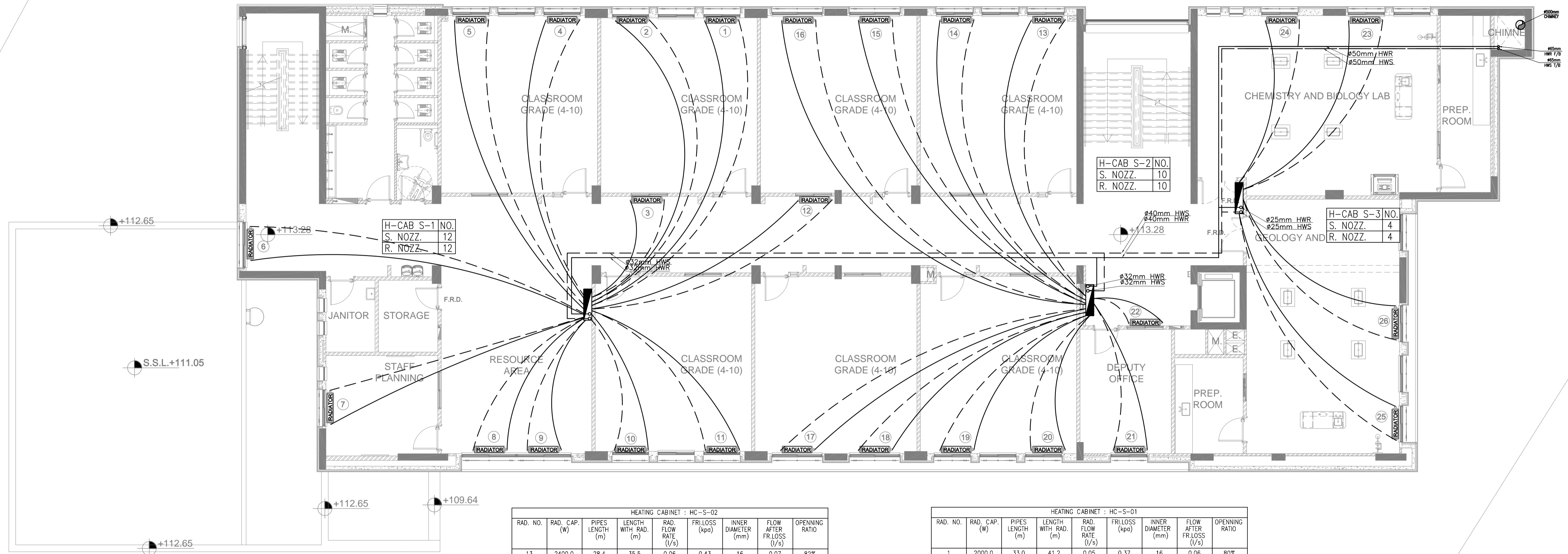
PHASE III  
PACKAGE 2  
Thahr Al Sarow Basic School For Boys (Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY PROJECT (USAID SKEP)

DRAWING NAME:  
FIRST FLOOR PLAN  
HVAC PIPING SYSTEM PLAN  
PLOT No 435  
LOCATION Thahr Al Sarow  
BASIN NO 4 Dair Allait

Design: S.H.  
Scale: 1:100  
Date: JUNE 2019  
Drawing Number: SKEP 14-MP102  
Drawn: CAD  
Date: JUNE 2019  
Checked: A.J.  
Approved: W.Z.  
North: [Compass Rose]  
Rev: 0



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HEATING CABINET : HC-S-03								
RAD. NO.	RAD. CAP. (W)	PIPES LENGTH (m)	LENGTH WITH RAD. (m)	RAD. FLOW RATE (l/s)	FR.LOSS (kpa)	INNER DIAMETER (mm)	FLOW AFTER FR.LOSS (l/s)	OPENING RATIO
23	3600.0	22.3	27.9	0.09	0.54	20	0.16	54%
24	3600.0	17.5	21.9	0.09	0.69	16	0.09	96%
25	3300.0	27.0	33.8	0.08	0.45	20	0.15	53%
26	3300.0	21.1	26.3	0.08	0.57	20	0.17	46%

HEATING CABINET : HC-S-02								
RAD. NO.	RAD. CAP. (W)	PIPES LENGTH (m)	LENGTH WITH RAD. (m)	RAD. FLOW RATE (l/s)	FR.LOSS (kpa)	INNER DIAMETER (mm)	FLOW AFTER FR.LOSS (l/s)	OPENING RATIO
13	2400.0	28.4	35.5	0.06	0.43	16	0.07	82%
14	2400.0	30.8	38.5	0.06	0.39	16	0.07	82%
15	1800.0	33.7	42.2	0.04	0.36	16	0.06	72%
16	1800.0	39.7	49.6	0.04	0.30	16	0.06	72%
17	2000.0	32.0	40.0	0.05	0.38	16	0.06	80%
18	2000.0	25.8	32.2	0.05	0.47	16	0.07	68%
19	2000.0	19.9	24.9	0.05	0.61	16	0.08	60%
20	2000.0	15.5	19.4	0.05	0.78	16	0.09	53%
21	2200.0	15.4	19.3	0.05	0.78	16	0.09	58%
22	3100.0	6.0	7.6	0.07	2.00	16	0.16	46%

HEATING CABINET : HC-S-01								
RAD. NO.	RAD. CAP. (W)	PIPES LENGTH (m)	LENGTH WITH RAD. (m)	RAD. FLOW RATE (l/s)	FR.LOSS (kpa)	INNER DIAMETER (mm)	FLOW AFTER FR.LOSS (l/s)	OPENING RATIO
1	2000.0	33.0	41.2	0.05	0.37	16	0.06	80%
2	2000.0	31.5	39.4	0.05	0.38	16	0.06	80%
3	2800.0	13.3	16.6	0.07	0.91	16	0.10	67%
4	2000.0	27.6	34.5	0.05	0.44	16	0.07	68%
5	2000.0	29.2	36.5	0.05	0.41	16	0.07	68%
6	2800.0	32.5	40.6	0.07	0.37	20	0.07	96%
7	2400.0	25.1	31.4	0.06	0.48	16	0.07	82%
8	2800.0	17.6	22.0	0.07	0.69	16	0.09	74%
9	2800.0	14.9	18.6	0.07	0.81	16	0.10	67%
10	2000.0	14.1	17.7	0.05	0.86	16	0.10	48%
11	2000.0	18.5	23.2	0.05	0.65	16	0.18	26%
12	3100.0	25.7	32.1	0.07	0.47	20	0.15	49%

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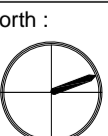
PHASE III  
PACKAGE 2

Thahr Al Sarow Basic School For Boys  
(Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY  
PROJECT (USAID SKEP)

DRAWING NAME:  
**SECOND FLOOR PLAN  
HVAC PIPING SYSTEM PLAN**  
PLOT No: 435  
LOCATION: Thahr Al Sarow  
BASIN NO: 4 Dair Allat

Design: S.H.  
SCALE: 1:100  
DATE: JUNE 2019  
DRAWING NUMBER: **SKEP 14-MP103**

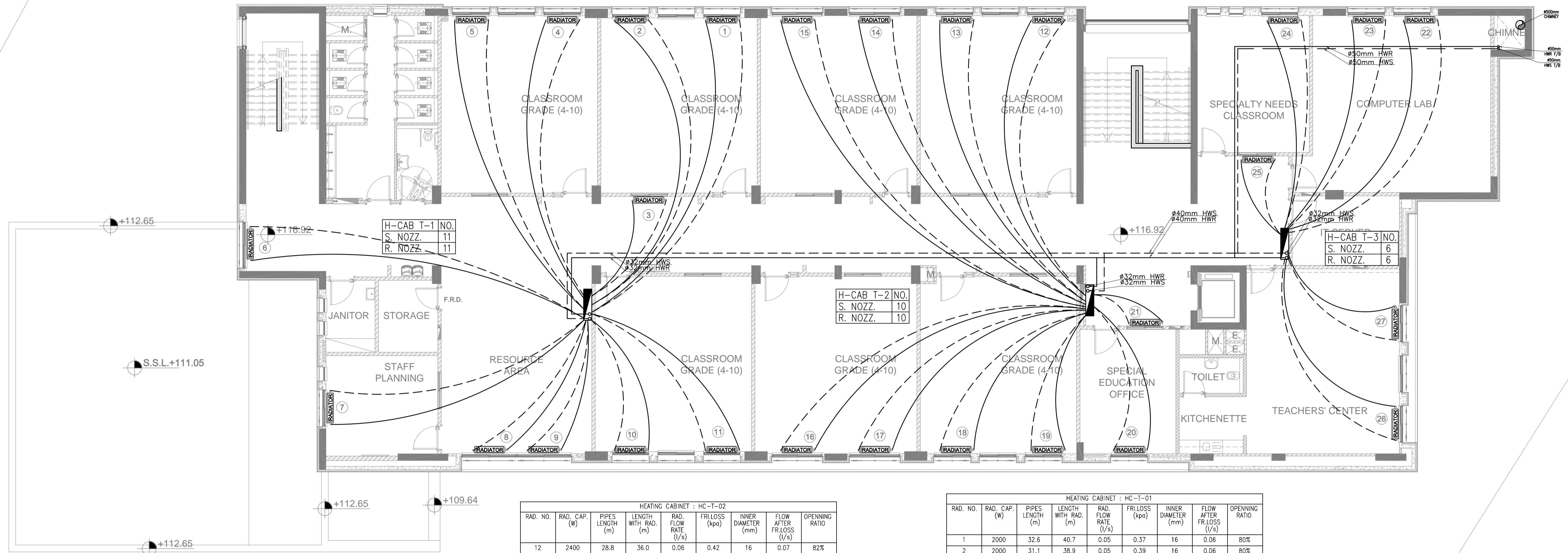
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Date: JUNE 2019  
Checked: A.J.  
Approved: W.Z.  
Rev.: 0



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HEATING CABINET : HC-T-03								
RAD. NO.	RAD. CAP. (W)	PIPES LENGTH (m)	LENGTH WITH RAD. (m)	RAD. FLOW RATE (l/s)	FRLOSS (kpa)	INNER DIAMETER (mm)	FLOW AFTER FRLOSS (l/s)	OPENNING RATIO
22	3600	27.5	34.3	0.09	0.44	20	0.15	57%
23	3600	22.6	28.3	0.09	0.53	20	0.16	54%
24	3300	20.5	25.6	0.08	0.59	16	0.08	99%
25	3600	9.1	11.3	0.09	1.33	16	0.13	66%
26	3300	22.5	28.1	0.08	0.54	20	0.16	49%
27	3300	14.4	18.1	0.08	0.84	16	0.10	79%

HEATING CABINET : HC-T-02								
RAD. NO.	RAD. CAP. (W)	PIPES LENGTH (m)	LENGTH WITH RAD. (m)	RAD. FLOW RATE (l/s)	FRLOSS (kpa)	INNER DIAMETER (mm)	FLOW AFTER FRLOSS (l/s)	OPENNING RATIO
12	2400	28.8	36.0	0.06	0.42	16	0.07	82%
13	2400	30.1	37.6	0.06	0.40	16	0.07	82%
14	1800	33.8	42.3	0.04	0.36	16	0.06	72%
15	1800	39.0	48.8	0.04	0.31	16	0.06	72%
16	2000	33.2	41.5	0.05	0.36	16	0.06	80%
17	2000	26.9	33.6	0.05	0.45	16	0.07	68%
18	2000	20.5	25.6	0.05	0.59	16	0.08	60%
19	2000	15.1	18.9	0.05	0.80	16	0.10	48%
20	1900	15.8	19.7	0.05	0.77	16	0.09	50%
21	3600	6.2	7.8	0.09	1.94	16	0.15	57%

HEATING CABINET : HC-T-01								
RAD. NO.	RAD. CAP. (W)	PIPES LENGTH (m)	LENGTH WITH RAD. (m)	RAD. FLOW RATE (l/s)	FRLOSS (kpa)	INNER DIAMETER (mm)	FLOW AFTER FRLOSS (l/s)	OPENNING RATIO
1	2000	32.6	40.7	0.05	0.37	16	0.06	80%
2	2000	31.1	38.9	0.05	0.39	16	0.06	80%
3	2800	12.9	16.1	0.07	0.94	16	0.10	67%
4	2000	27.6	34.5	0.05	0.44	16	0.07	68%
5	2000	29.5	36.9	0.05	0.41	16	0.07	68%
6	2800	32.7	40.8	0.07	0.37	20	0.07	100%
7	2400	25.8	32.2	0.06	0.47	16	0.07	82%
8	2800	17.4	21.8	0.07	0.69	16	0.09	74%
9	2800	15.1	18.9	0.07	0.80	16	0.10	67%
10	2000	14.2	17.8	0.05	0.85	16	0.10	48%
11	2000	18.3	22.9	0.05	0.66	16	0.09	53%

NOTES:



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PHASE III  
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Thahr Al Sarow Basic School For Boys  
(Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY  
PROJECT (USAID SKEP)

DRAWING NAME:  
**THIRD FLOOR PLAN  
HVAC PIPING SYSTEM PLAN**  
PLOT No 435 LOCATION Thahr Al Sarow BASIN NO 4 Dair Allat

Design: S.H. Drawn: CAD Checked: A.J. Approved: W.Z.  
SCALE: 1:100 DATE: JUNE 2019  
DRAWING NUMBER: **SKEP 14-MP104**

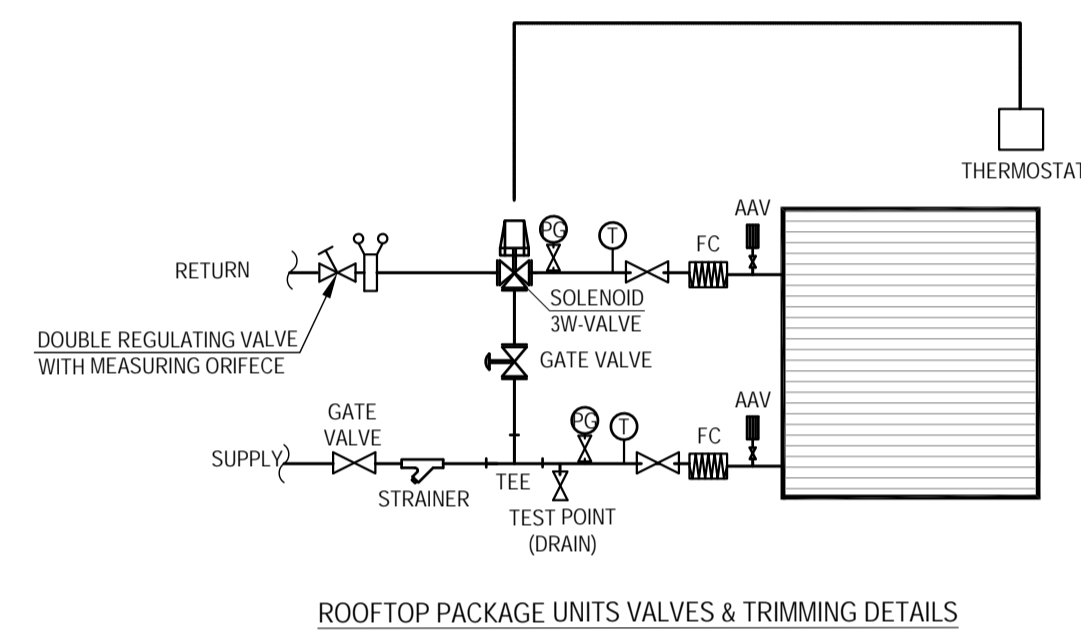
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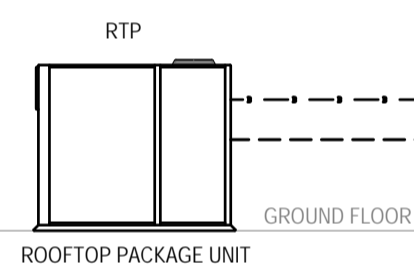


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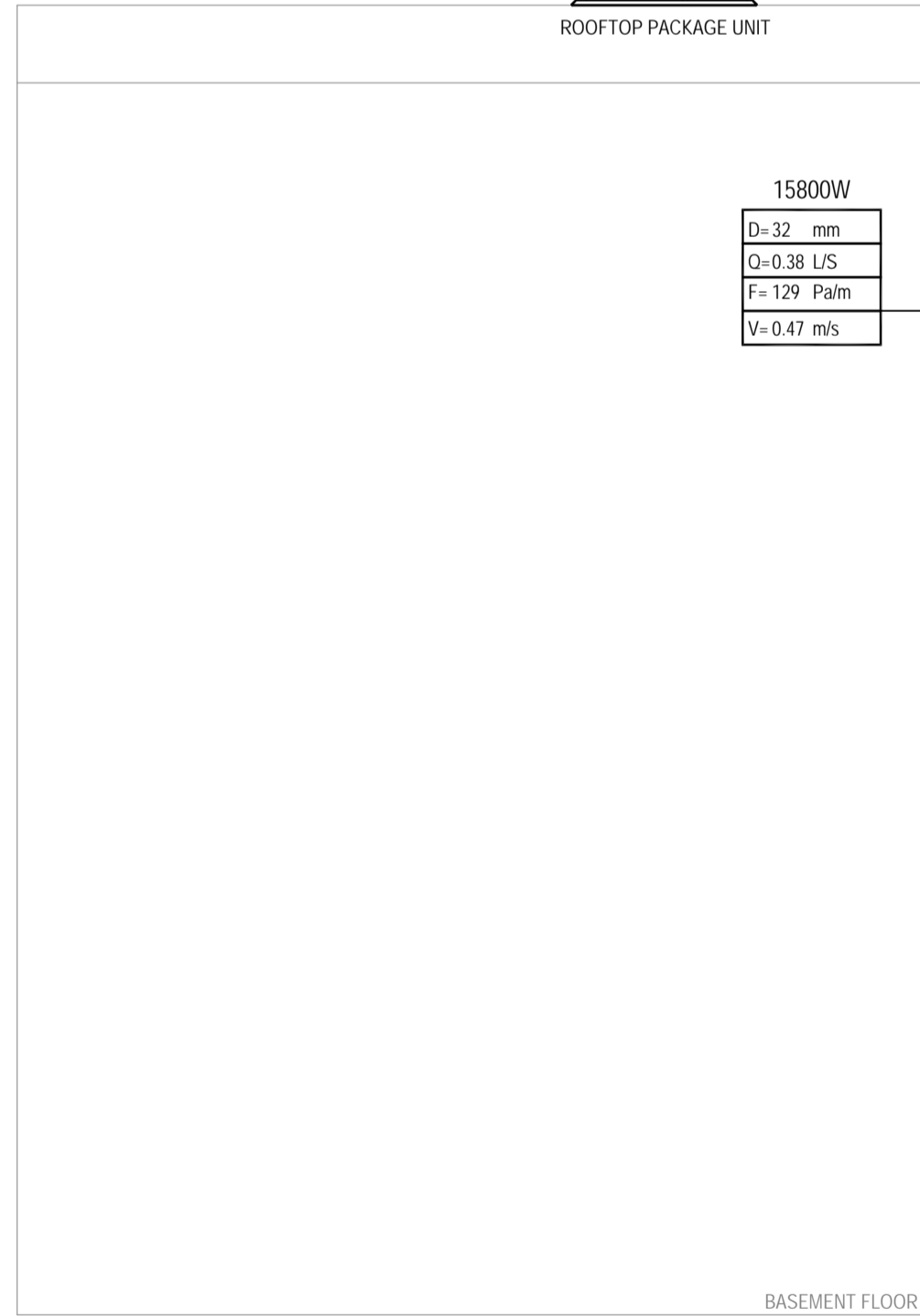
D=25mm	DIAMETER
Q=0.23 L/S	FLOW
F=114 Palm	FRICTION
V=0.47 m/s	VELOCITY



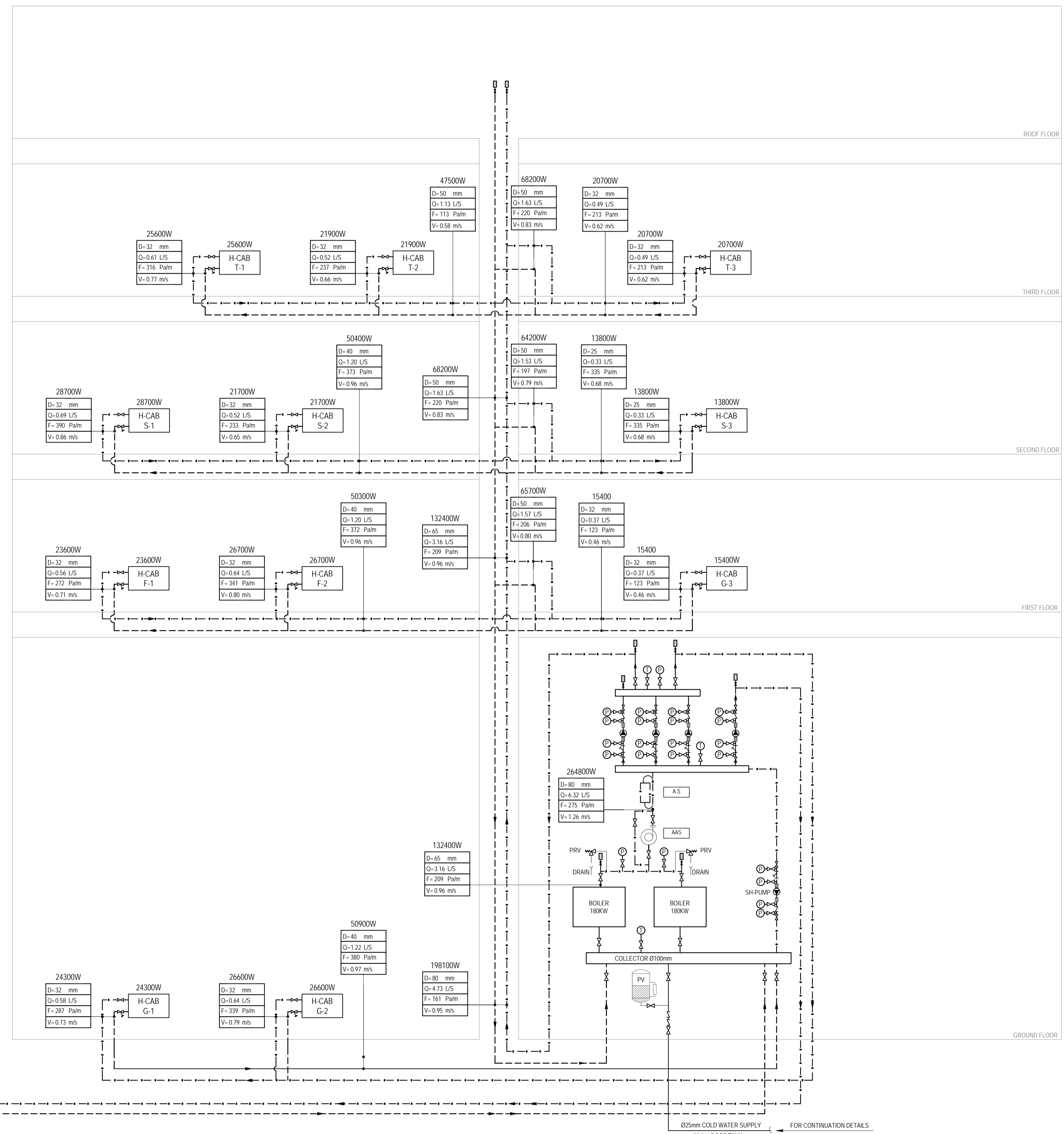
ROOFTOP PACKAGE UNITS VALVES & TRIMMING DETAILS



ROOFTOP PACKAGE UNIT



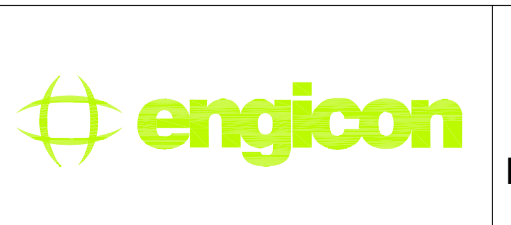
BASEMENT FLOOR



025mm COLD WATER SUPPLY FROM ROOF TANK  
FOR CONTINUATION DETAILS REFER TO DWG No. XXXXXX

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PHASE III  
PACKAGE 2  
Thahr Al Sarow Basic School For Boys (Jerash)  
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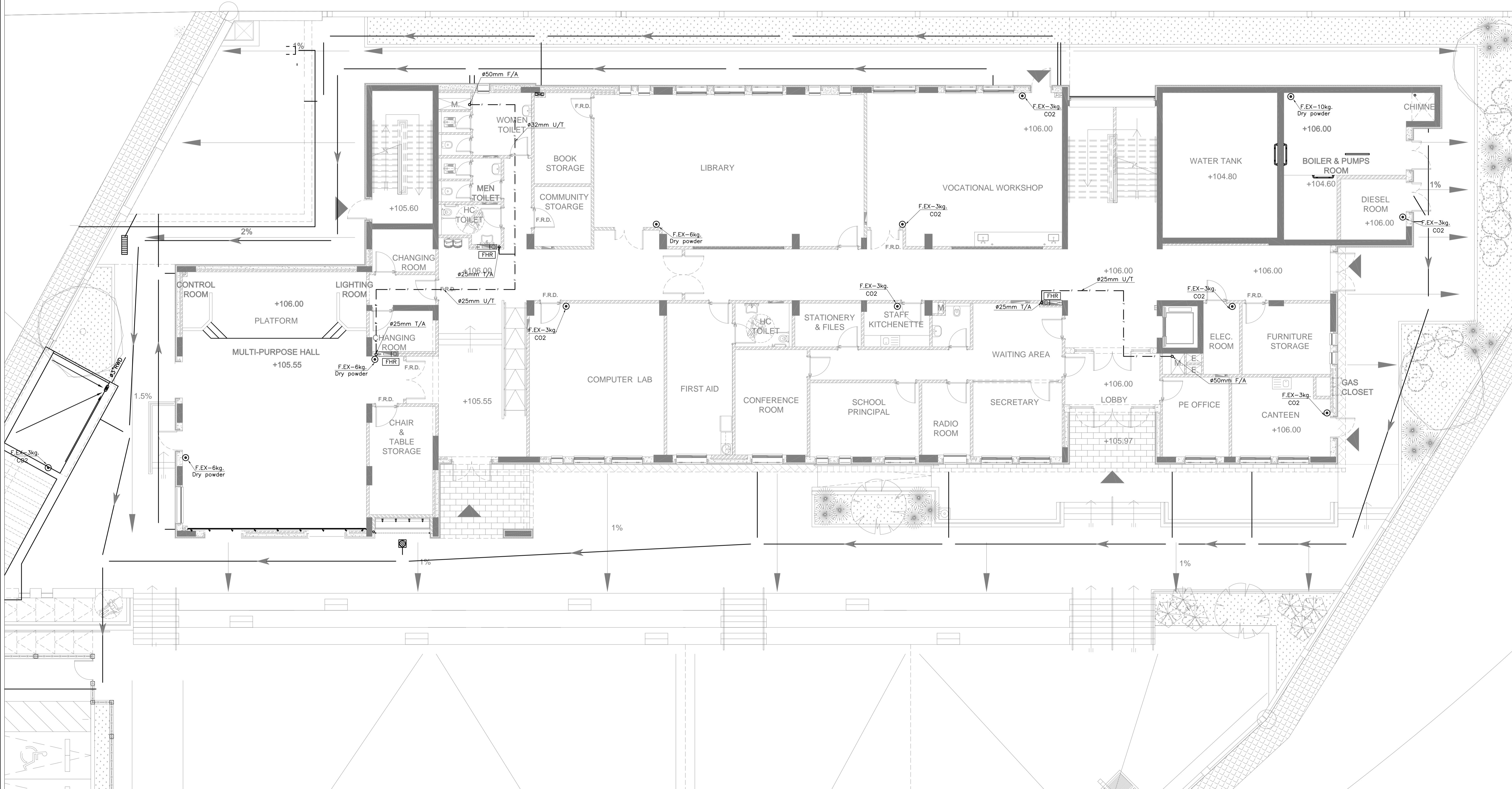
DRAWING NAME:  
**HVAC PIPING SYSTEM RISER DIAGRAM**

Design: S.H.	Drawn: CAD	Checked: A.J.	North:
SCALE: N.T.S.	Date: JUNE 2019	Approved: W.Z.	
DRAWING NUMBER: <b>SKEP 14-MP601</b>			Rev.: 0

PLOT No	LOCATION	BASIN NO
435	Thahr Al Sarow	4 Dair Alliat



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Thahr Al Sarow Basic School For Boys  
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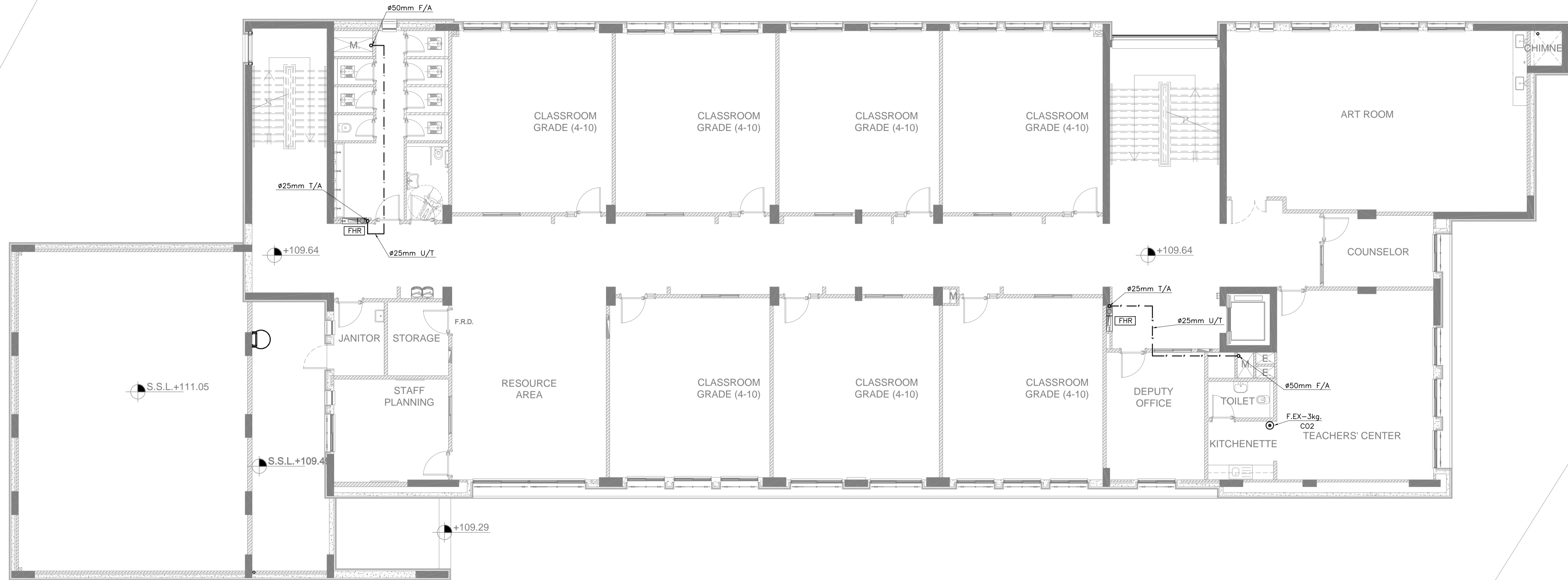
DRAWING NAME:  
**GROUND FLOOR PLAN  
FIRE FIGHTING SYSTEM PLAN**

DESIGNER: S.H.  
SCALE: 1:100  
DRAWING NUMBER: SKEP 14-FX101

Design:	Drawn:	Checked:	North:
S.H.	CAD	A.J.	
SCALE:	Date:	Approved:	
1:100	JUNE 2019	W.Z.	
DRAWING NUMBER:	SKEP 14-FX101		
Rev.:	0		



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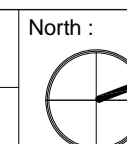
PHASE III  
PACKAGE 2

Thahr Al Sarow Basic School For Boys  
(Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY  
PROJECT (USAID SKEP)

DRAWING NAME: <b>FIRST FLOOR PLAN FIRE FIGHTING SYSTEM PLAN</b>		
DESIGN: S.H.	DRAWN: CAD	CHECKED: A.J.
SCALE: 1:100	DATE: JUNE 2019	APPROVED: W.Z.
PLOT No: 435	LOCATION: Thahr Al Sarow	BASIN NO: 4 Dair Alliat

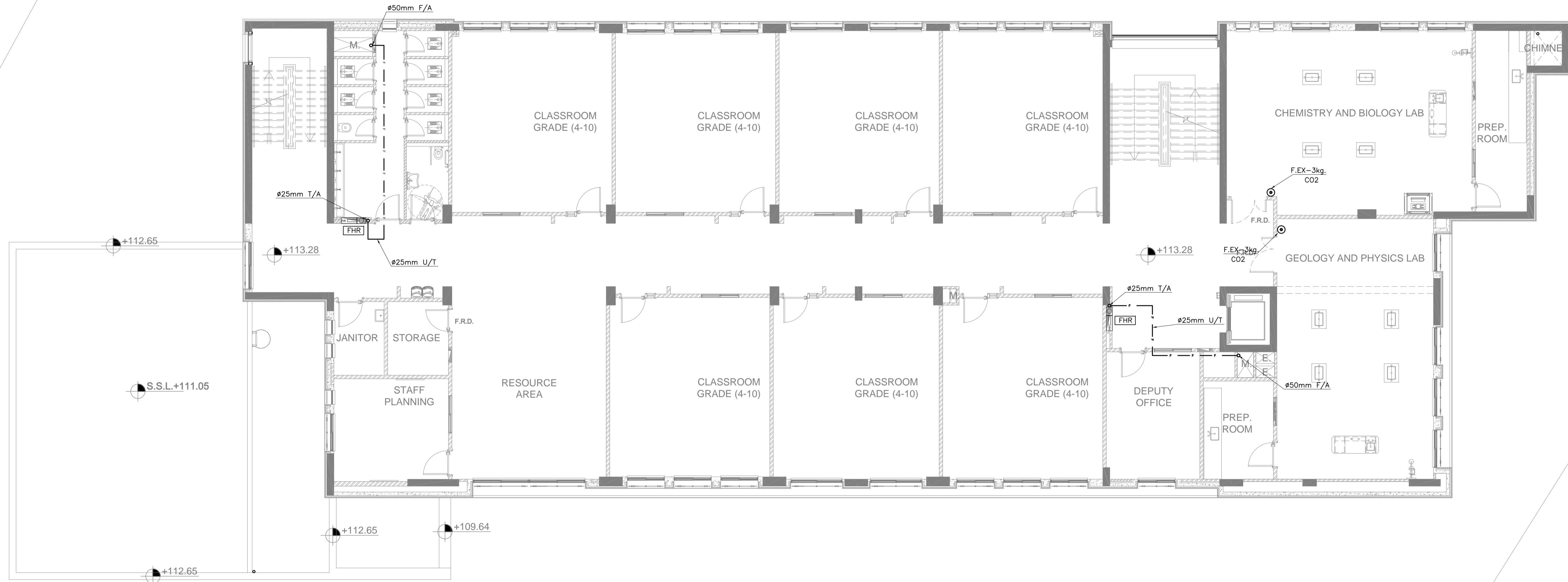
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Rev.:	0
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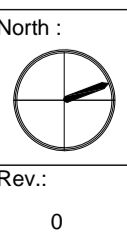


PHASE III  
 PACKAGE 2

Thahr Al Sarow Basic School For Boys  
 (Jerash)  
 SCHOOLS FOR A KNOWLEDGE ECONOMY  
 PROJECT (USAID SKEP)

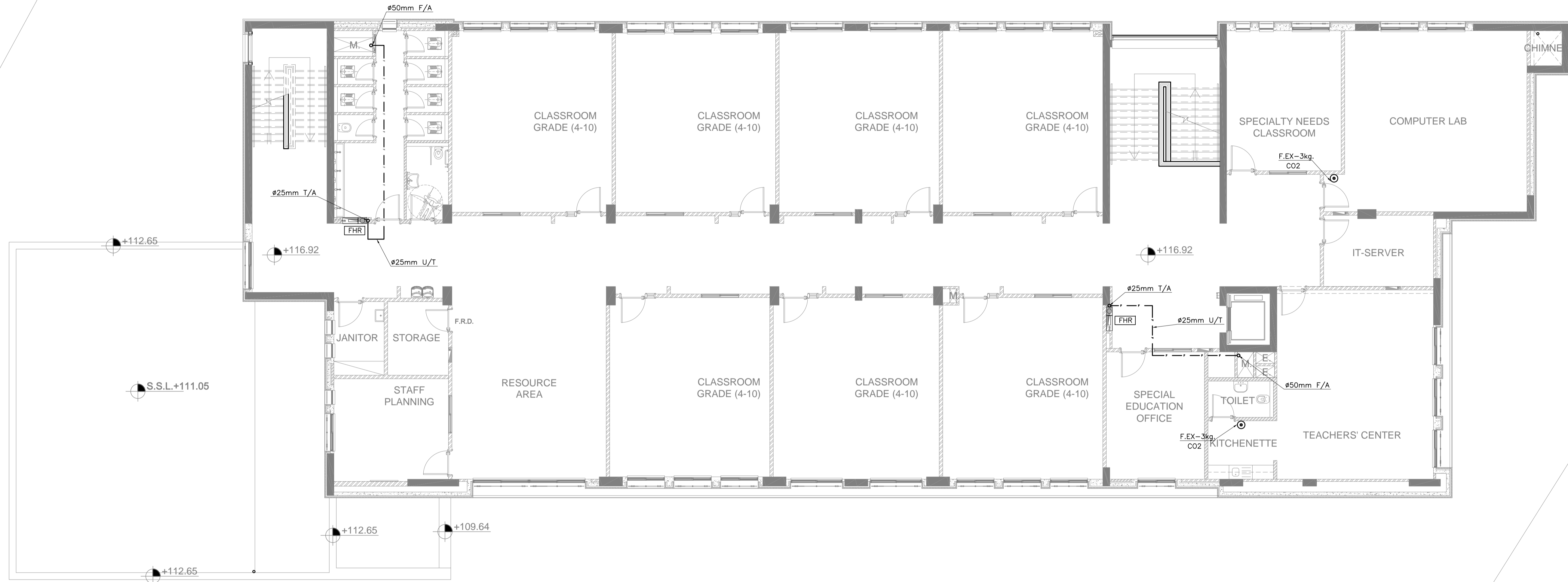
DRAWING NAME: <b>SECOND FLOOR PLAN FIRE FIGHTING SYSTEM PLAN</b>		
DESIGN: S.H.	DRAWN: CAD	CHECKED: A.J.
SCALE: 1:100	DATE: JUNE 2019	APPROVED: W.Z.
PLOT No: 435	LOCATION: Thahr Al Sarow	BASIN No: 4 Dair Alliat

DRAWING NUMBER: <b>SKEP 14-FX103</b>	
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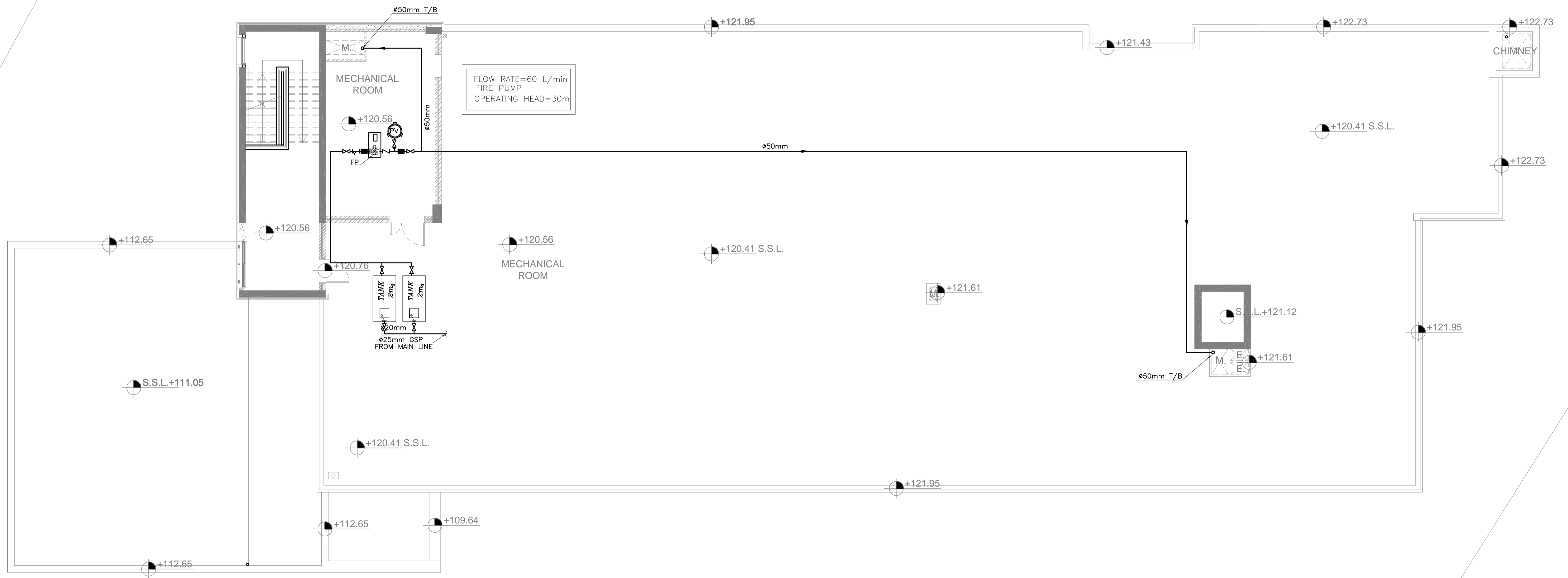
Thahr Al Sarow Basic School For Boys  
(Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY  
PROJECT (USAID SKEP)

DRAWING NAME: <b>THIRD FLOOR PLAN FIRE FIGHTING SYSTEM PLAN</b>		
DESIGN: S.H.	DRAWN: CAD	CHECKED: A.J.
SCALE: 1:100	DATE: JUNE 2019	APPROVED: W.Z.
PLOT No: 435	LOCATION: Thahr Al Sarow	BASIN NO: 4 Dair Allat

DESIGN: S.H.	DRAWN: CAD	CHECKED: A.J.	North:
SCALE: 1:100	DATE: JUNE 2019	APPROVED: W.Z.	
DRAWING NUMBER: <b>SKEP 14-FX104</b>			Rev.: 0



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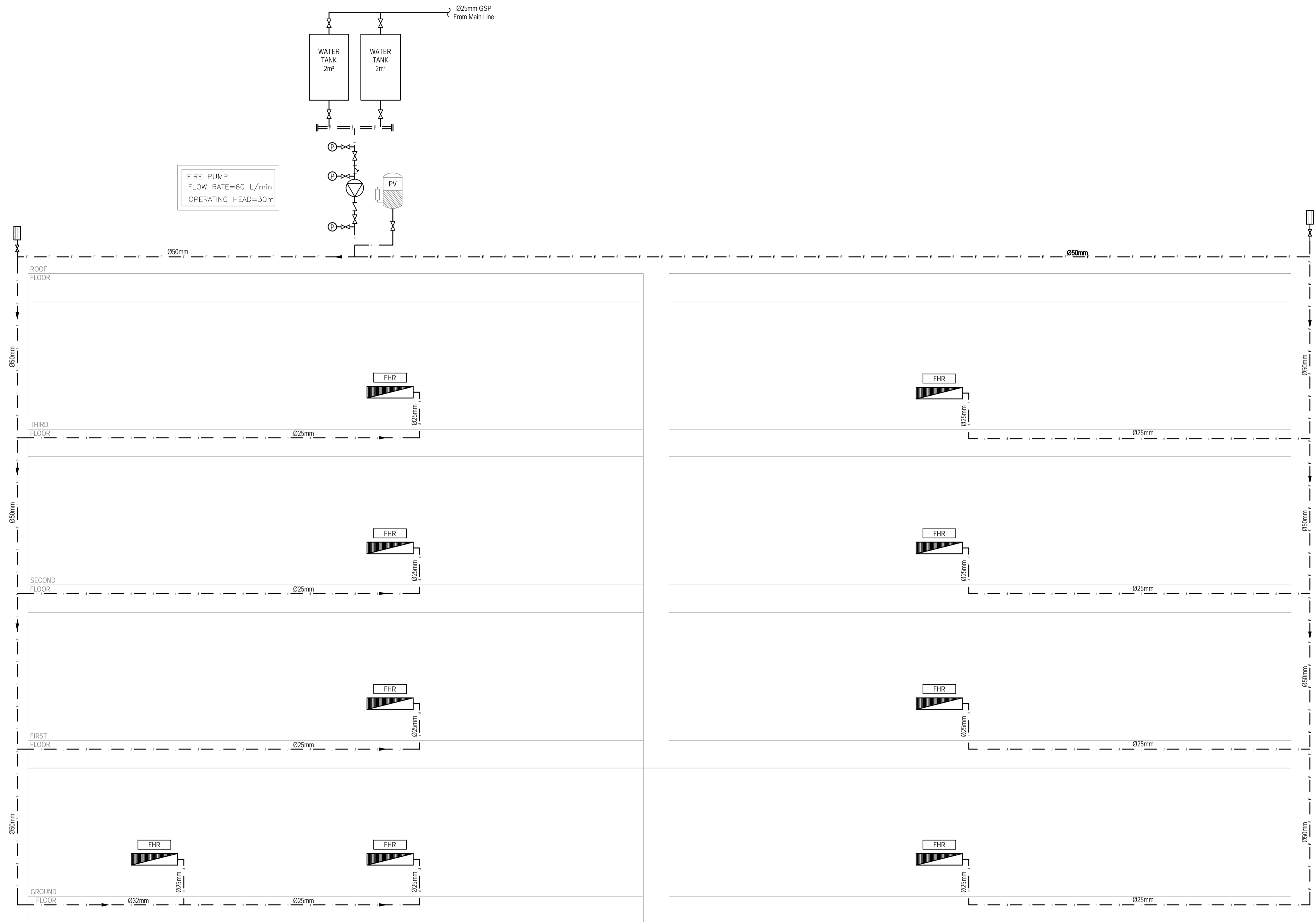
PHASE III  
PACKAGE 2  
Thahr Al Sarow Basic School For Boys (Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY PROJECT (USAID SKEP)

DRAWING NAME:  
**ROOF FLOOR PLAN  
FIRE FIGHTING SYSTEM PLAN**

Design: S.H.	Drawn: CAD	Checked: A.J.	North:
SCALE: 1:100	Date: JUNE 2019	Approved: W.Z.	
DRAWING NUMBER: <b>SKEP 14-FX105</b>			Rev.: 0

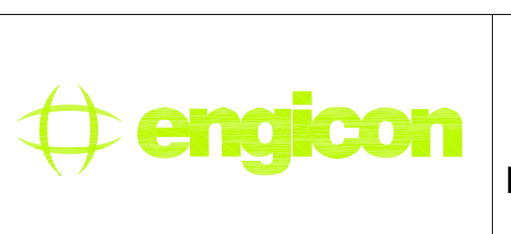


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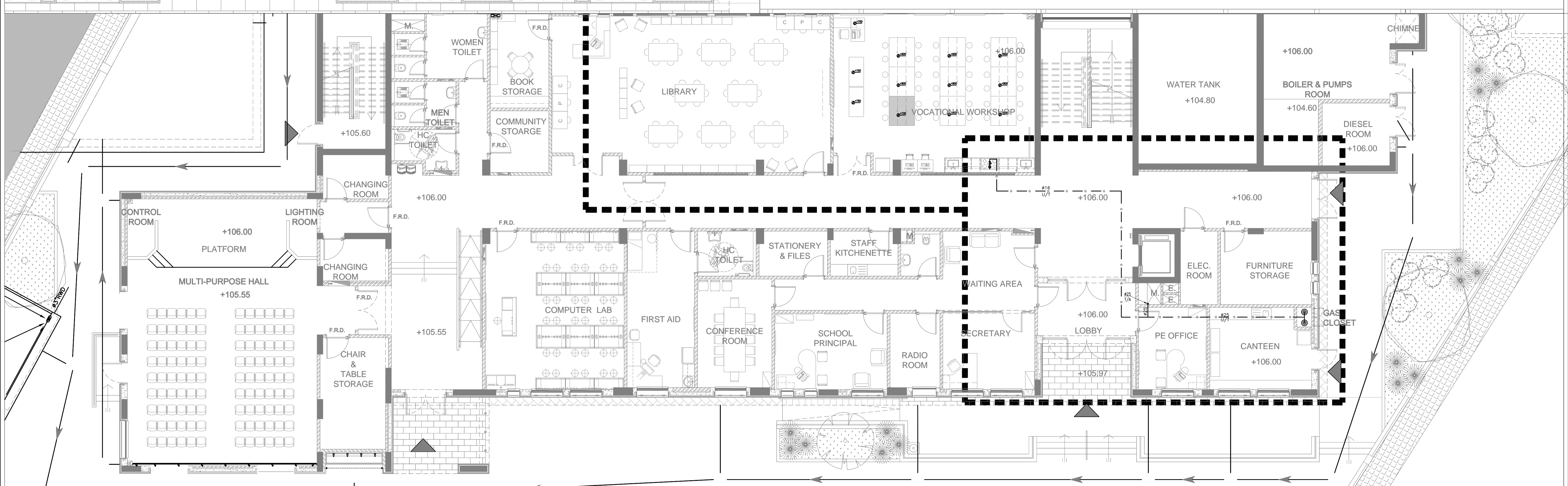
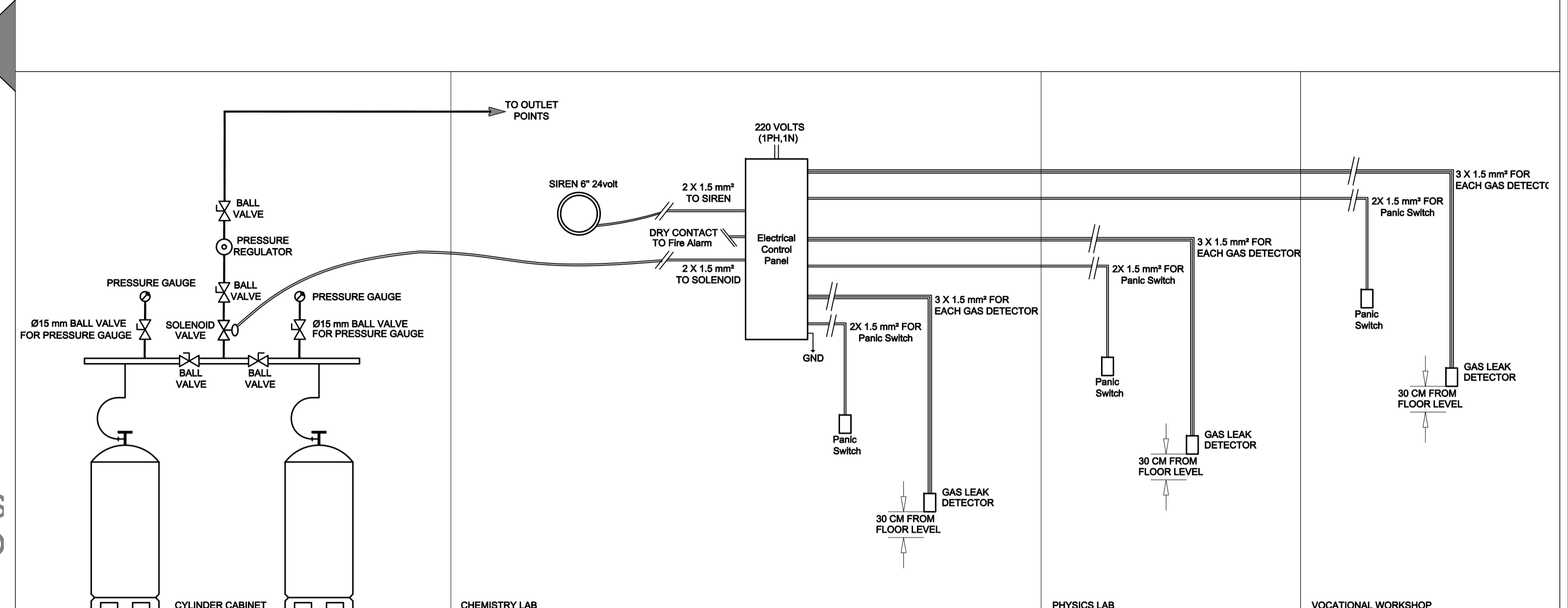
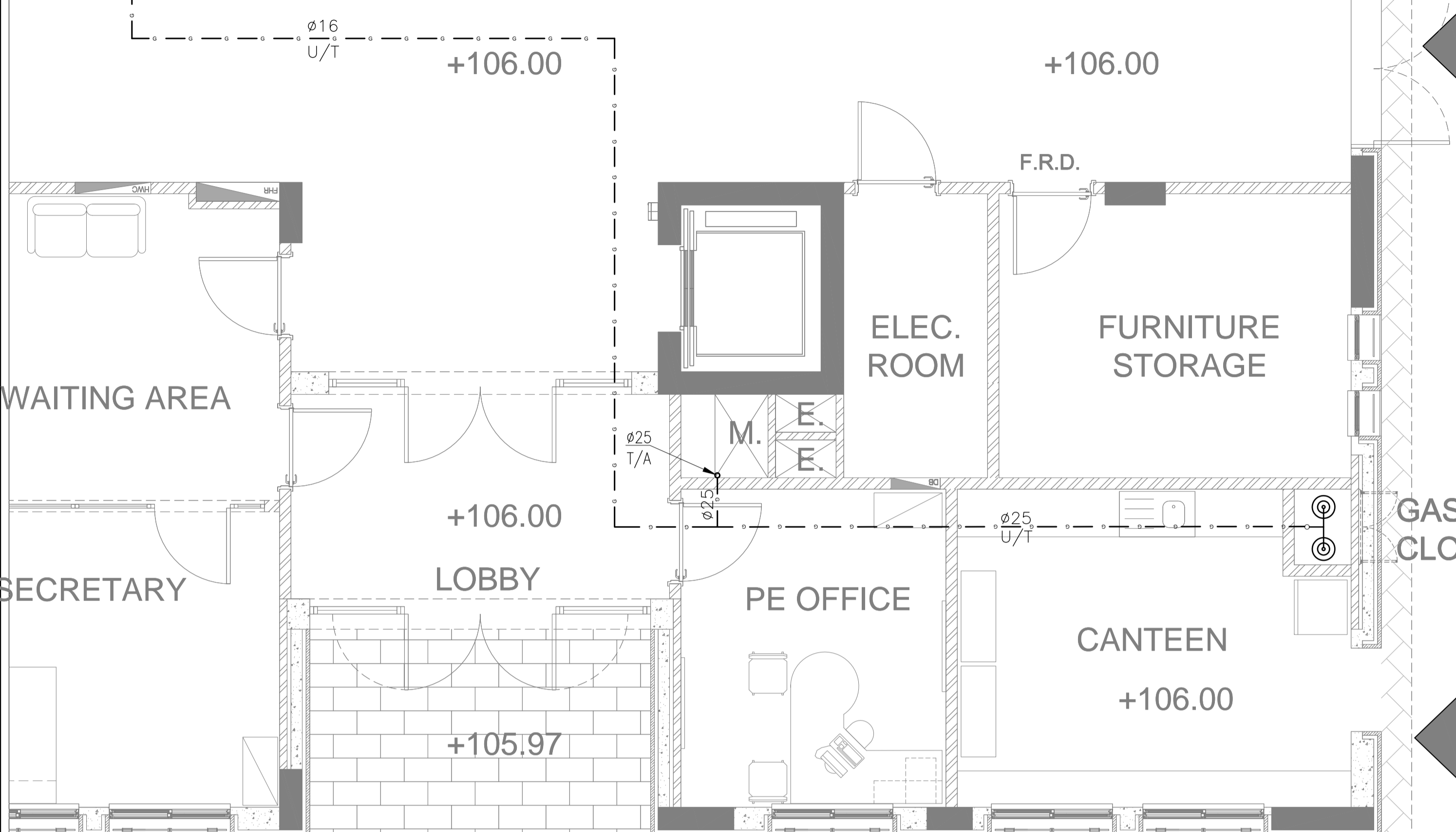
PHASE III  
PACKAGE 2  
Thahr Al Sarow Basic School For Boys (Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY PROJECT (USAID SKEP)

DRAWING NAME: <b>Fire Fighting System Riser Daigram</b>		
PLOT No 435	LOCATION Thahr Al Sarow	BASIN NO 4 Dair Alliat

Design: S.H.	Drawn: CAD	Checked: A.J.	North: 
SCALE: N.T.S.	Date: JUNE 2019	Approved: W.Z.	Rev.: 0
DRAWING NUMBER: <b>SKEP 14-FX601</b>			

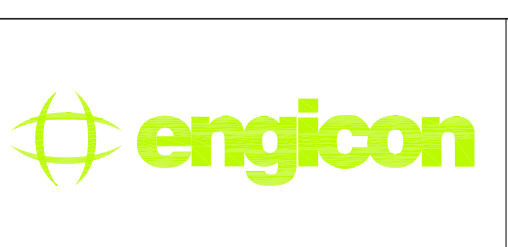


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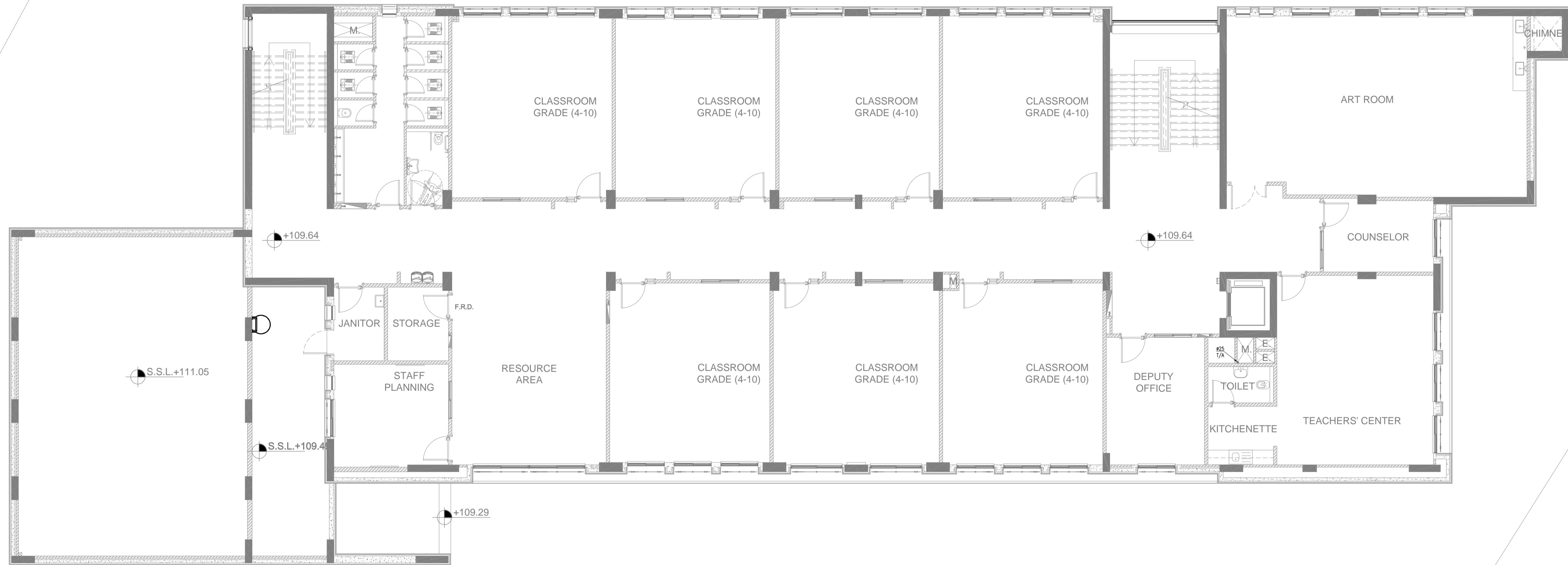
PHASE III  
PACKAGE 2  
Thahr Al Sarow Basic School For Boys (Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY PROJECT (USAID SKEP)

DRAWING NAME:  
GROUND FLOOR PLAN  
LPG SYSTEM PLAN  
PLOT No 435  
LOCATION Thahr Al Sarow  
BASIN NO 4 Dair Alliat

Design: S.H.	Drawn: CAD	Checked: A.J.	North:
SCALE: 1:100	Date: JUNE 2019	Approved: W.Z.	
DRAWING NUMBER: SKEP 14-PF101			Rev: 0



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PHASE III  
PACKAGE 2

Thahr Al Sarow Basic School For Boys  
(Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY  
PROJECT (USAID SKEP)

DRAWING NAME:  
**FIRST FLOOR PLAN  
LPG SYSTEM PLAN**

DESIGN	SCALE	DATE	APPROVED
S.H.	1:100	JUNE 2019	A.J.

DESIGN	SCALE	DATE	APPROVED
S.H.	1:100	JUNE 2019	A.J.

DRAWING NUMBER:  
**SKEP 14-PF102**

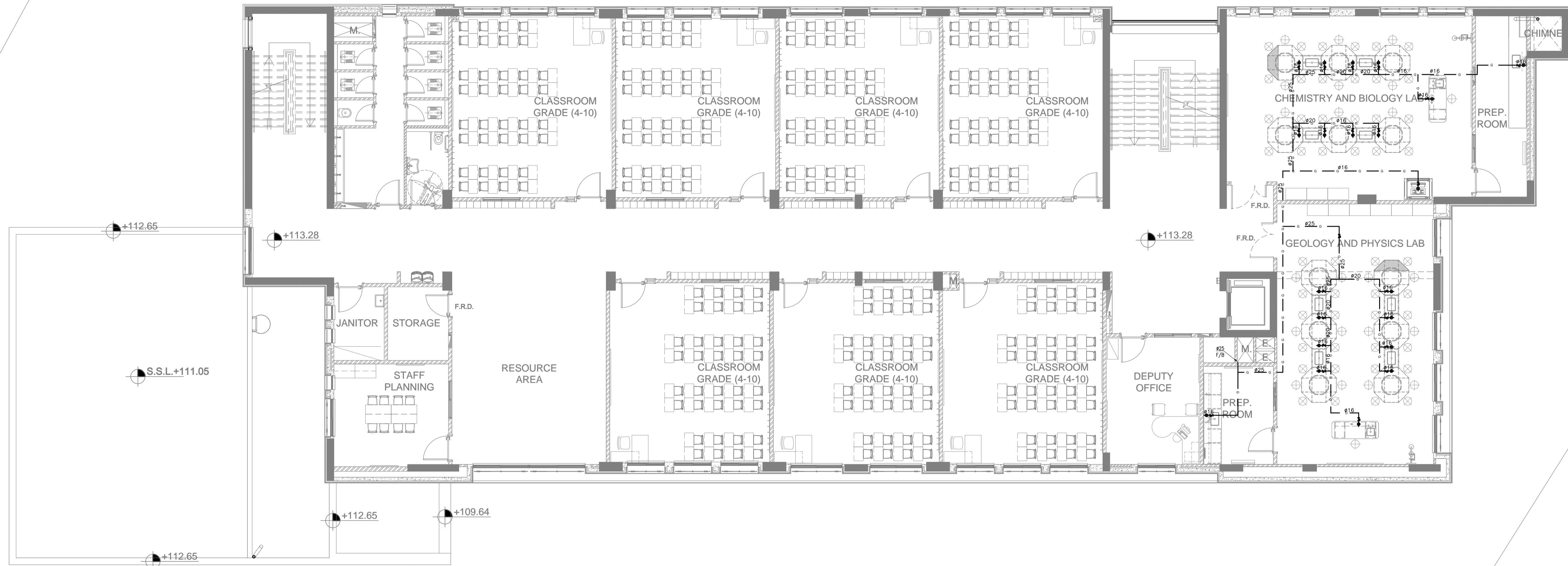


Rev.: 0

PLOT NO	LOCATION	BASIN NO
435	Thahr Al Sarow	4 Dair Alliat



تم التصميم حسب الكودات المعتمدة  
بموجب التعليمات الفنية السارية  
مكتب رقم - ٥



REV.	DATE	REMARKS
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PHASE III  
PACKAGE 2

Thahr Al Sarow Basic School For Boys  
(Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY  
PROJECT (USAID SKEP)

DRAWING NAME:  
**SECOND FLOOR PLAN  
LPG SYSTEM PLAN**

DESIGN: S.H.	DRAWN: CAD	CHECKED: A.J.
SCALE: 1:100	DATE: JUNE 2019	APPROVED: W.Z.

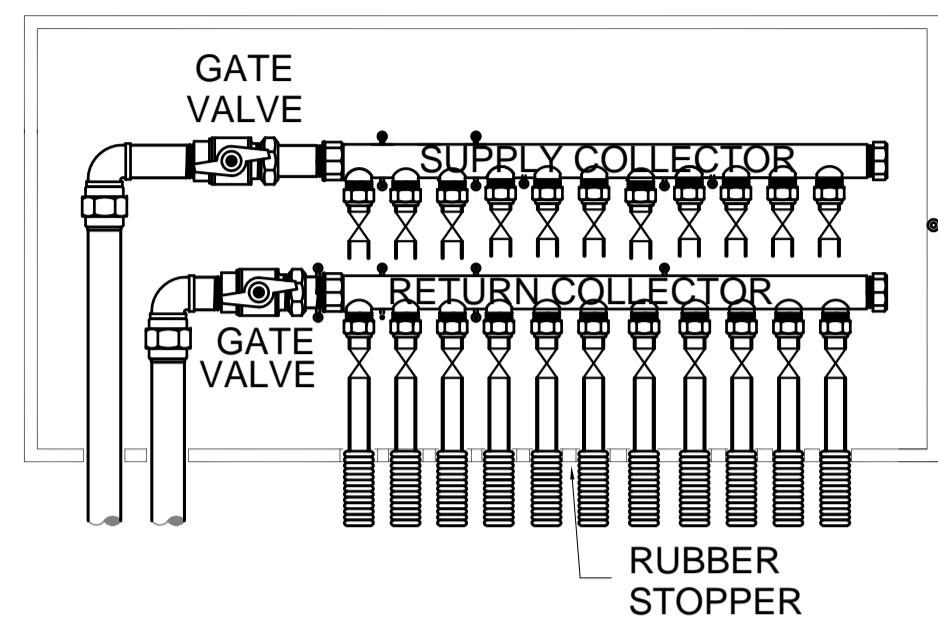
DRAWING NUMBER: **SKEP 14-PF103**

PLOT No	LOCATION	BASIN No
435	Thahr Al Sarow	4 Dair Allat

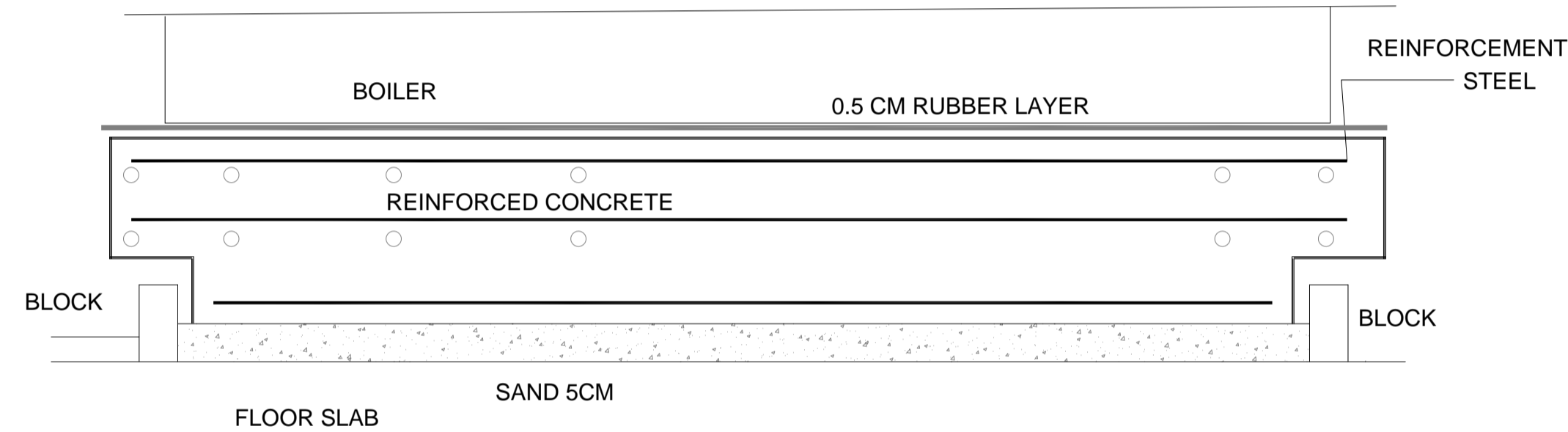
Design: S.H.	Drawn: CAD	Checked: A.J.	North:
SCALE: 1:100	DATE: JUNE 2019	APPROVED: W.Z.	Rev.: 0



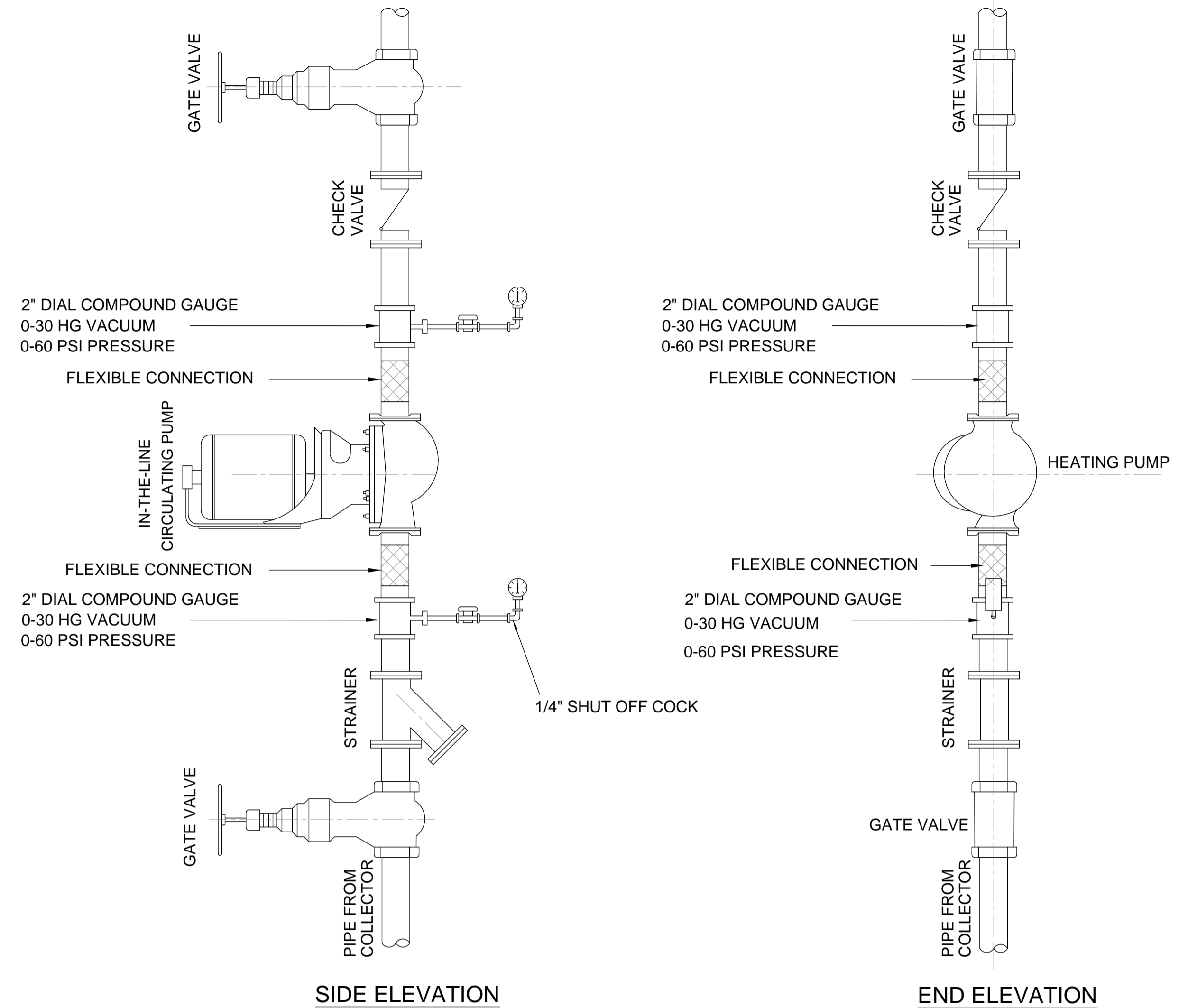
تم التصميم حسب الكودات المعتمدة  
بموجب التعليمات الفنية السارية  
مكتب رقم - 0



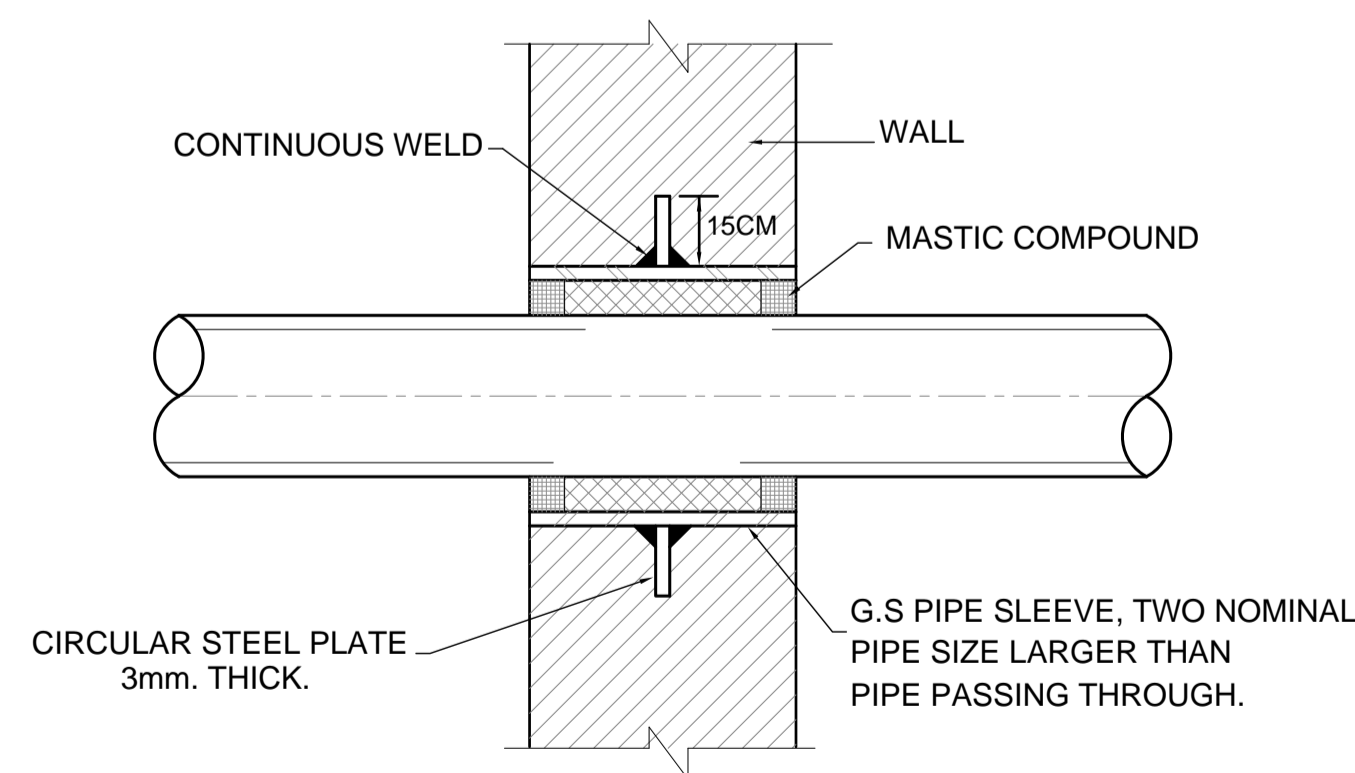
HEATING CABINET



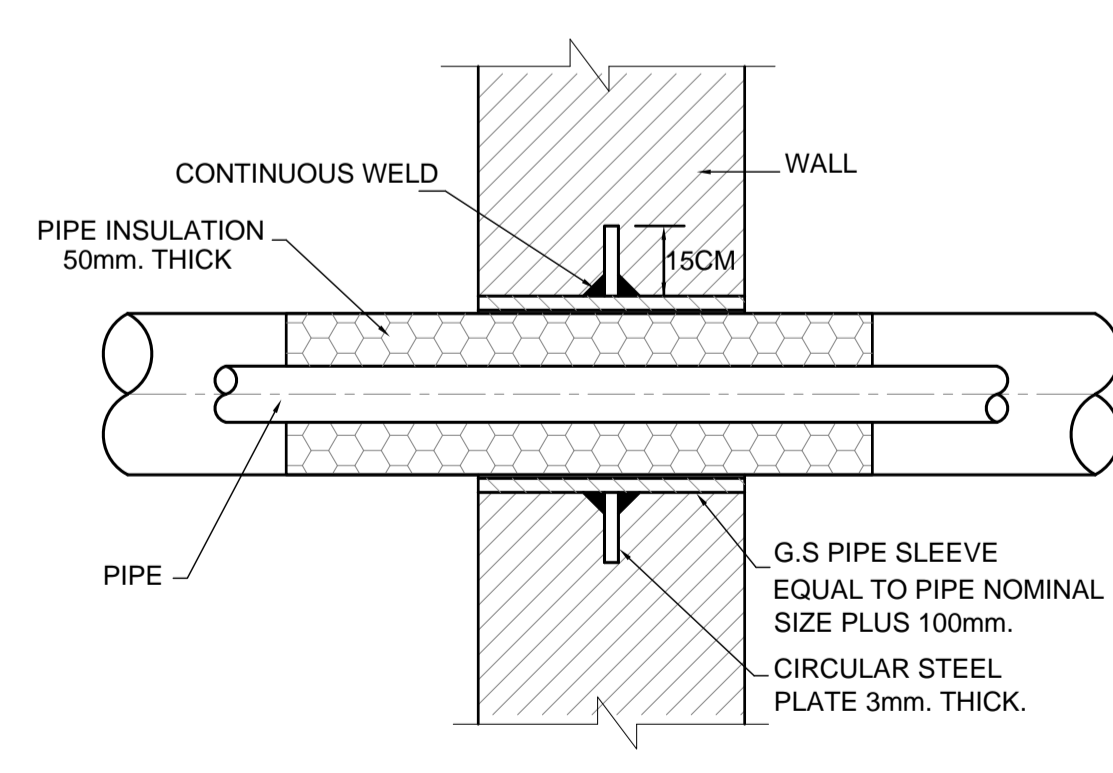
TYPICAL BASE ASSEMBLY FOR THE BOILER IN GROUND FLOOR



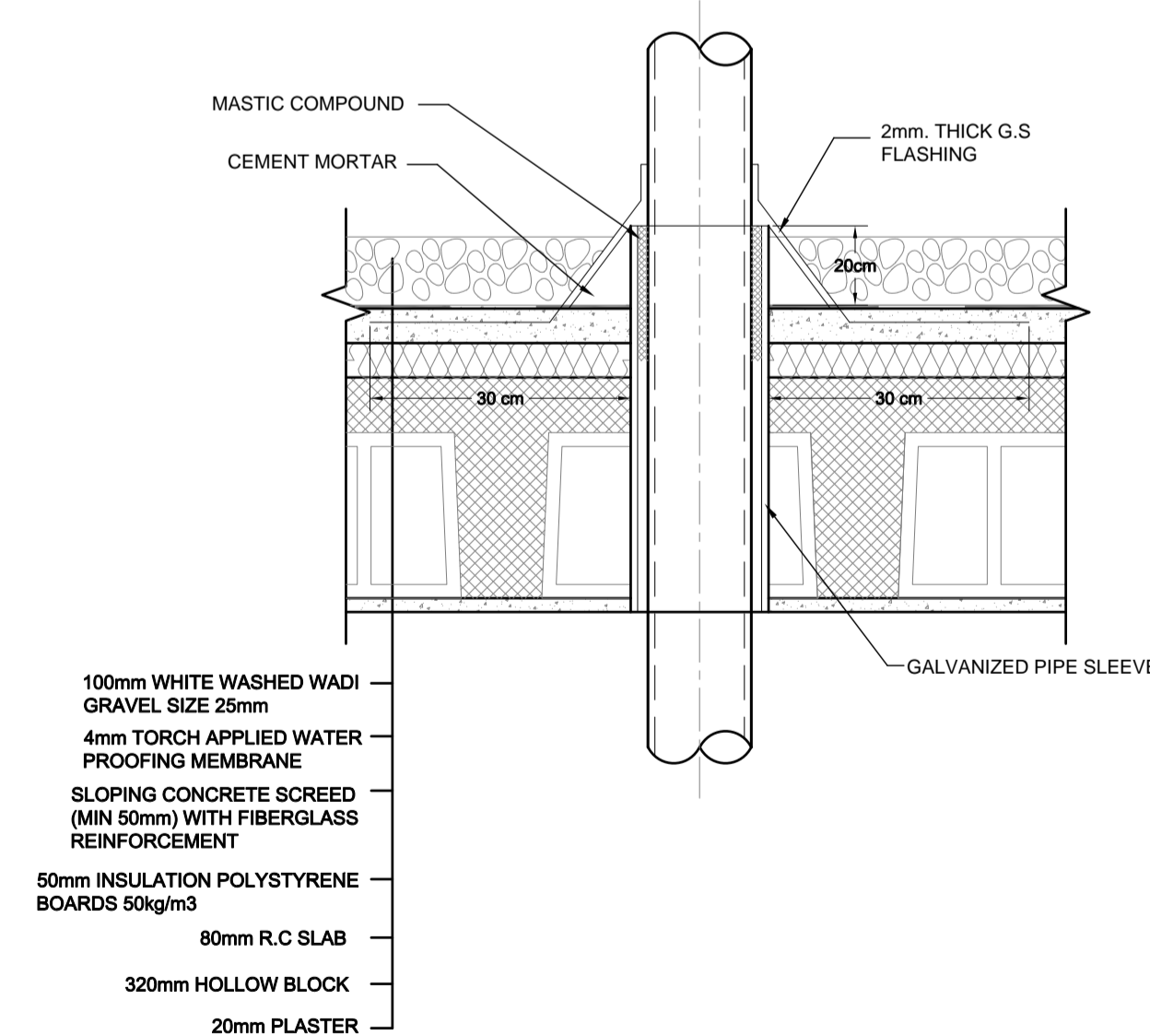
HEATING PUMP CONNECTIONS DETAIL (IN-LINE TYPE) LINE TYPE



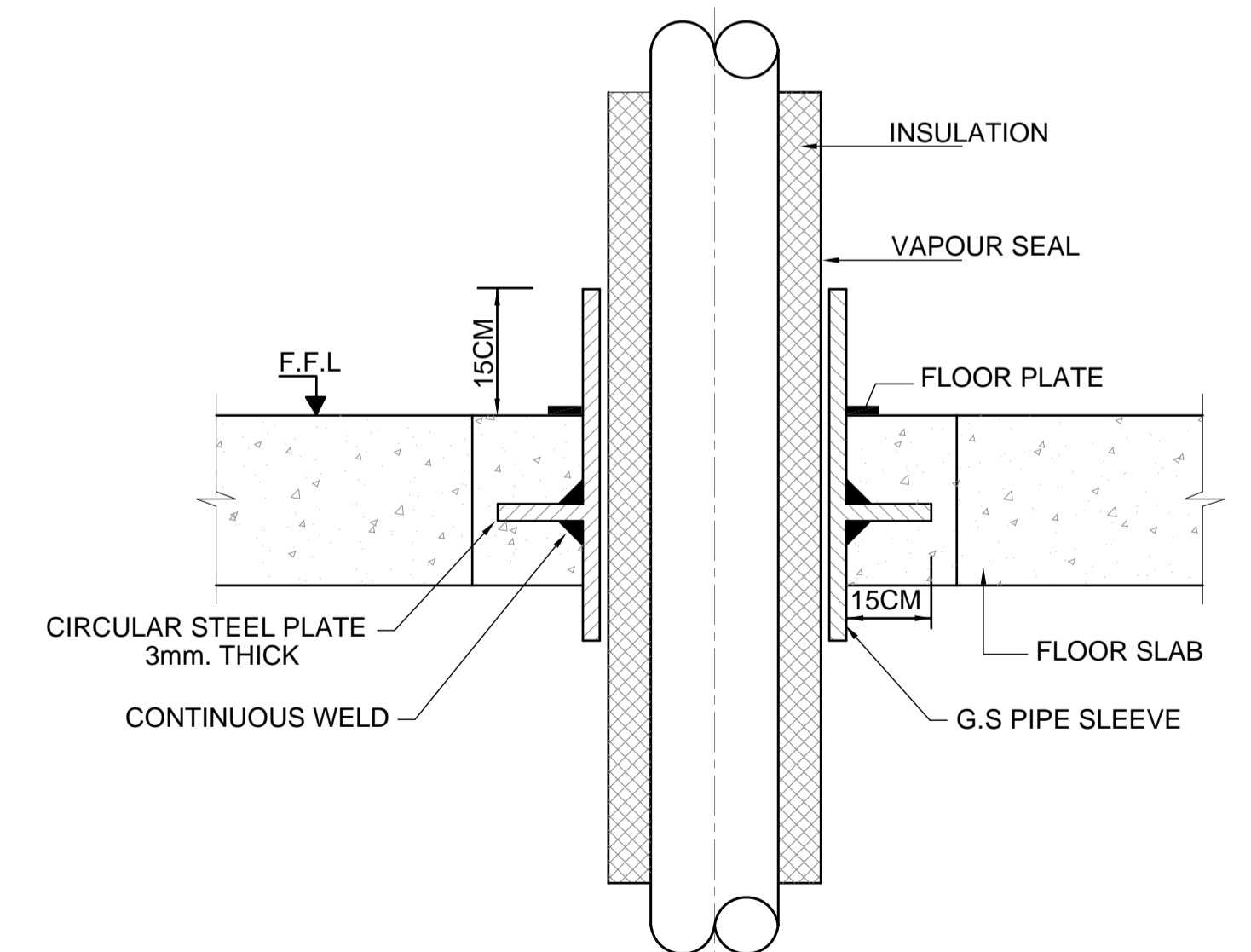
NOT INSULATED PIPE SLEEVE THROUGH WALL.



INSULATED PIPE SLEEVE THROUGH WALL



PIPE SLEEVE THROUGH ROOF



INSULATED PIPE SLEEVE THROUGH FLOOR SLAB

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NOTES:



**USAID**  
FROM THE AMERICAN PEOPLE



PHASE III  
PACKAGE 2

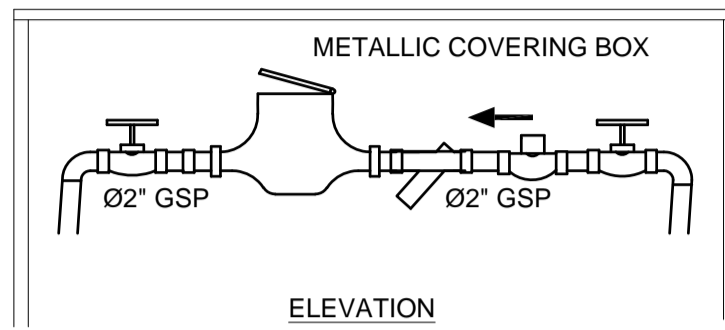
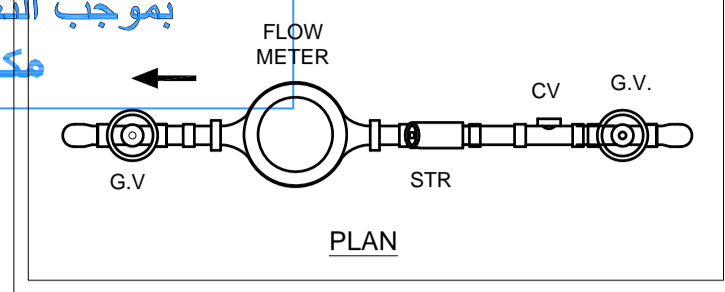
Thahr Al Sarow Basic School For Boys (Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY PROJECT (USAID SKEP)

DRAWING NAME:  
**MECHANICAL GENERAL DETAILS 01**

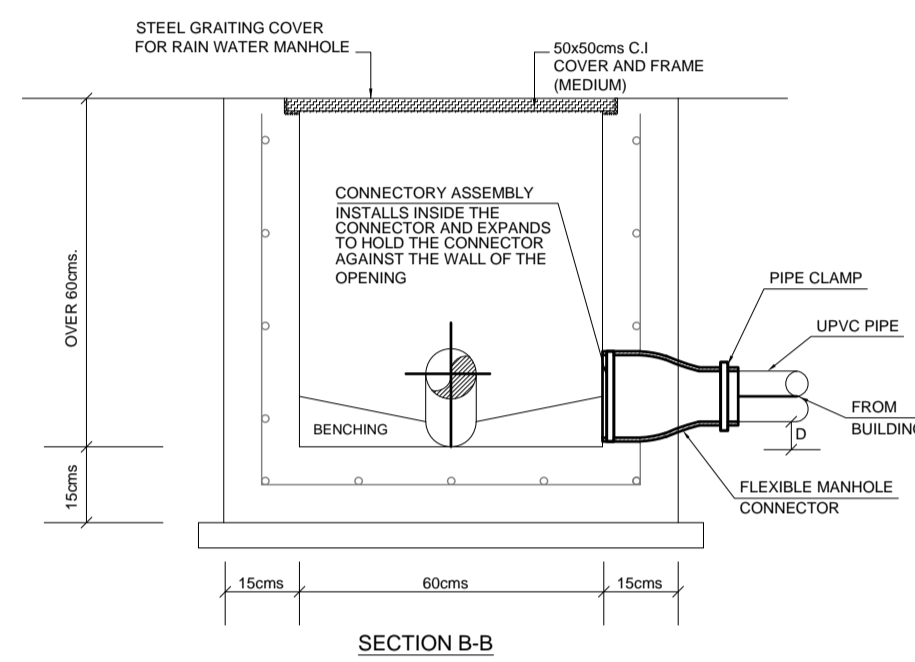
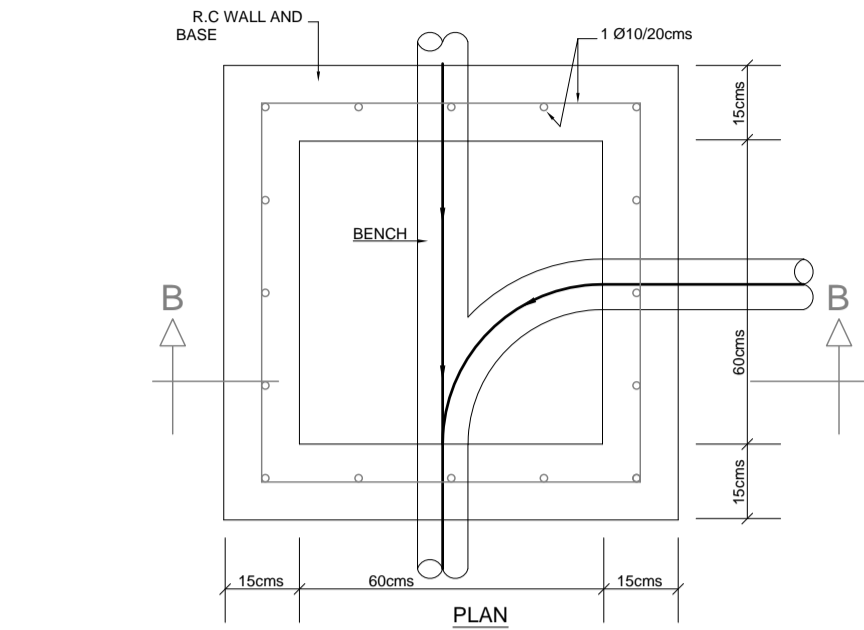
Design: CAD	Drawn: CAD	Checked: A.J.	North:
SCALE: N.T.S.	Date: JUNE 2019	Approved: W.Z.	
DRAWING NUMBER: SKEP 14-GM501			Rev.: 0



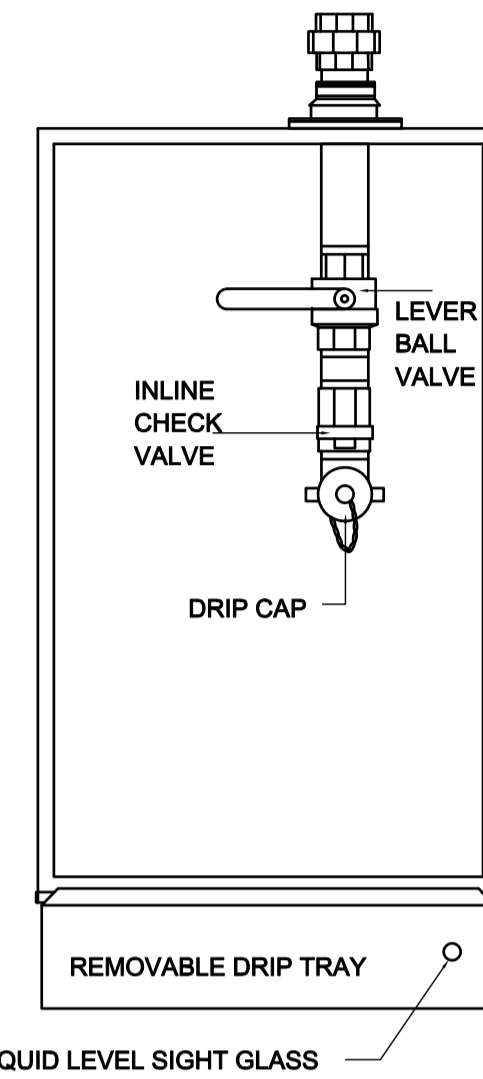
تم التصميم حسب الكودات المعتمدة بموجب التعليمات الفنية السارية مكتب رقم - 0



WATER FLOW METER



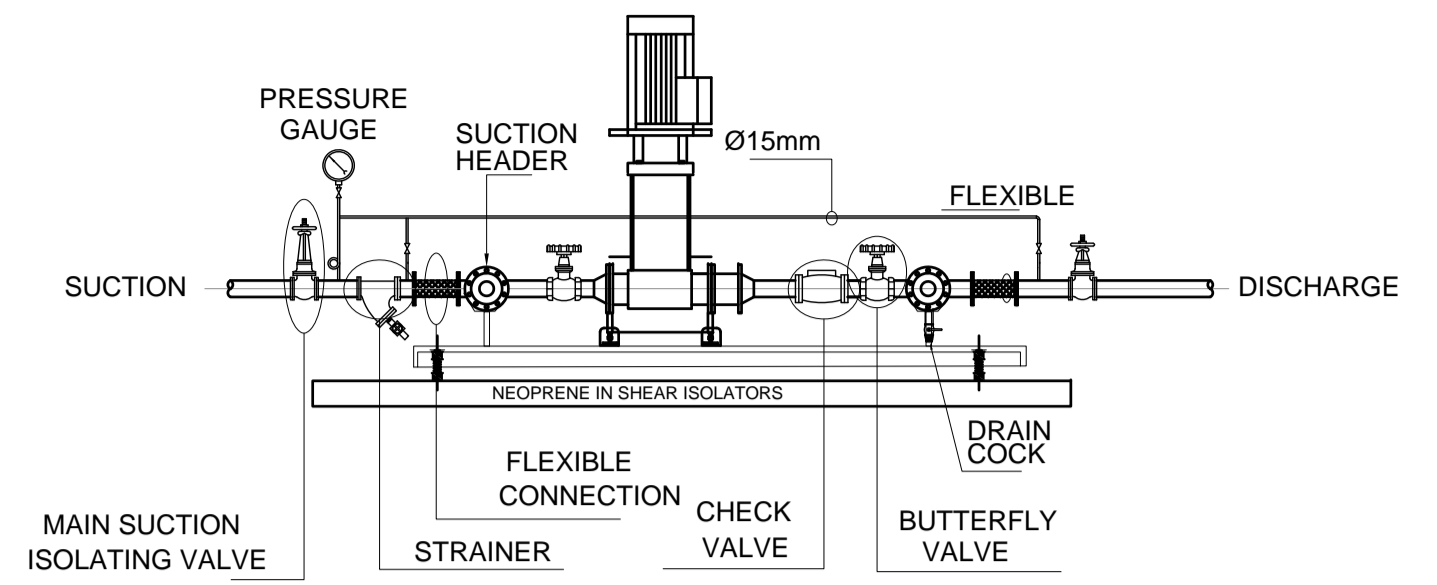
DRAINAGE MANHOLE - 60x60CM DEPTH UP TO 150CM.



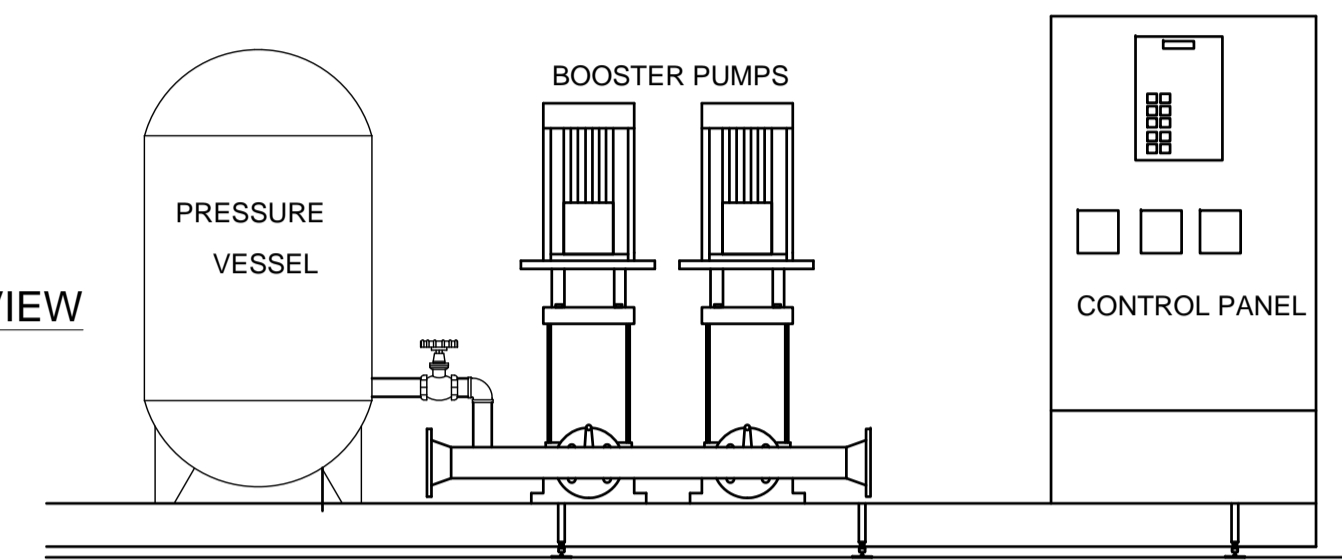
LIQUID LEVEL SIGHT GLASS

DIESEL FILLING POINT CABINET

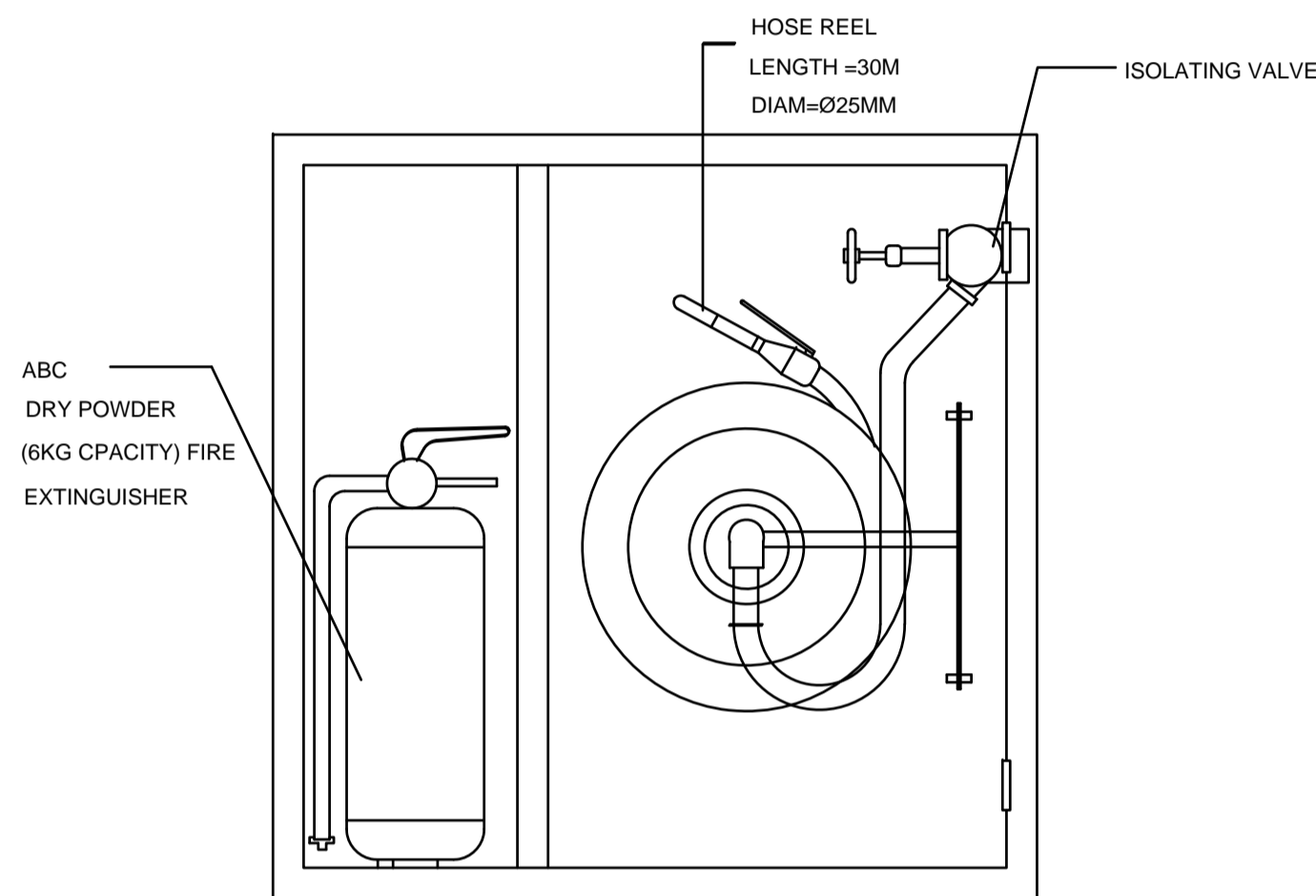
SIDE VIEW



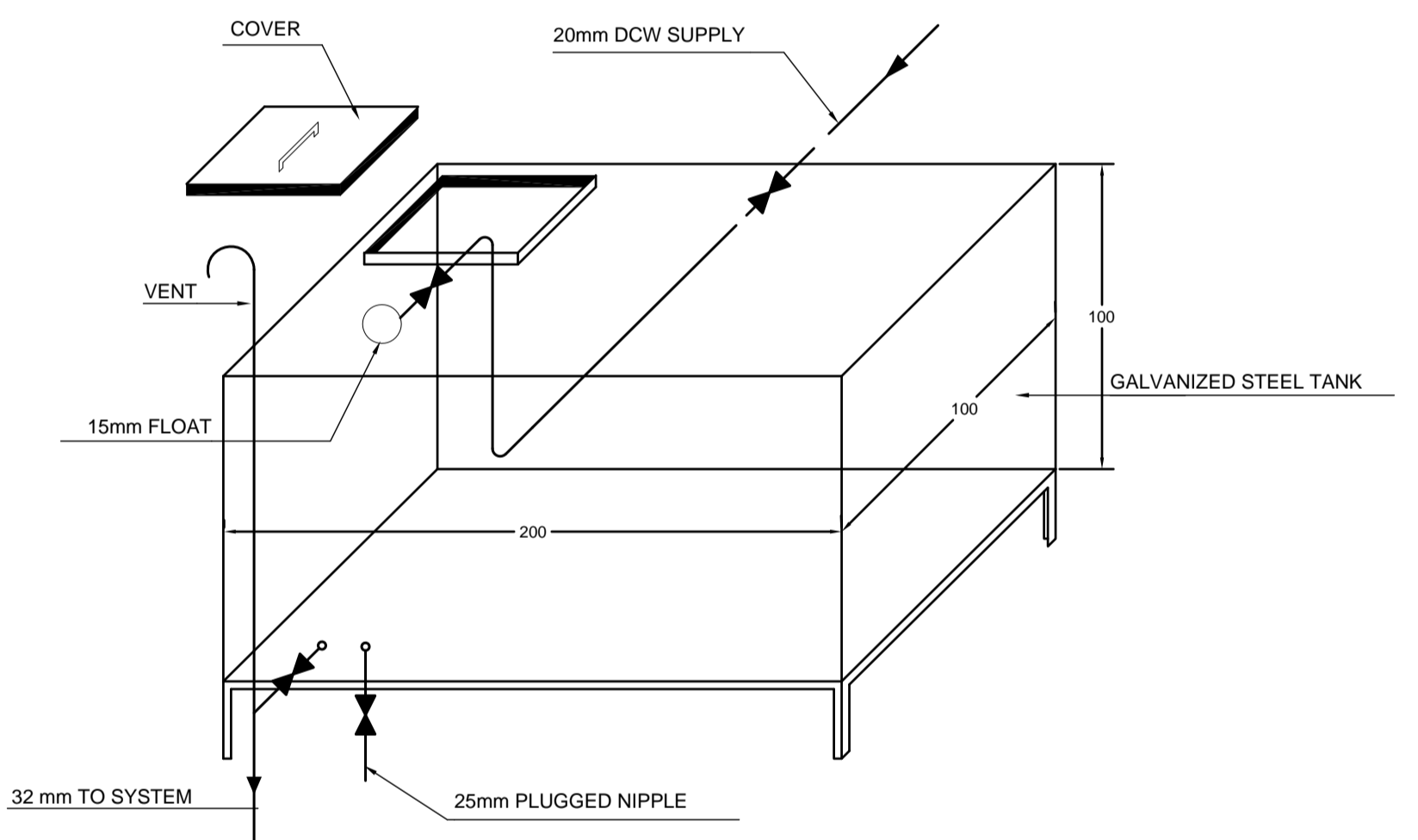
FRONT VIEW



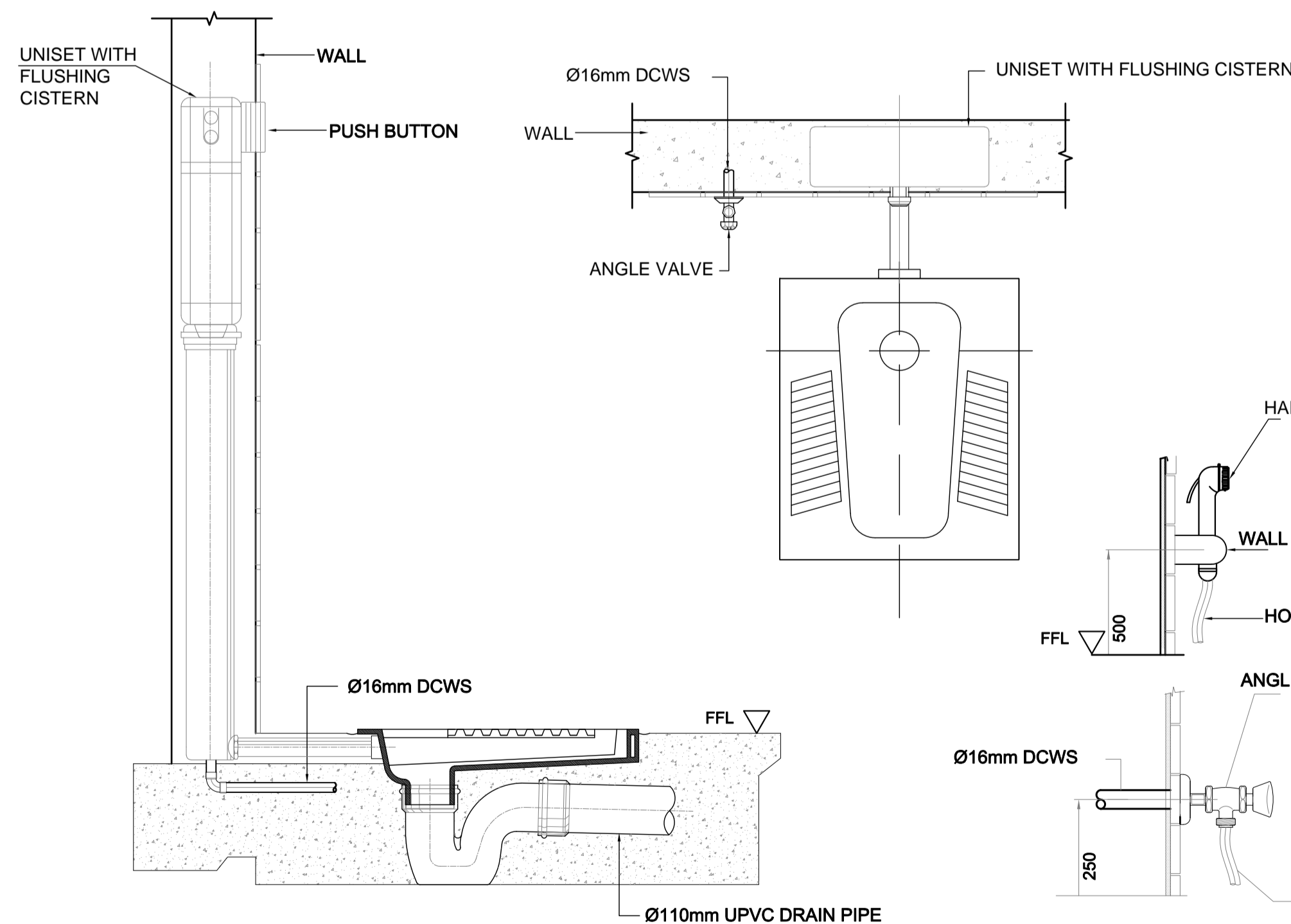
MAIN DOMESTIC COLD WATER PUMP DETAIL



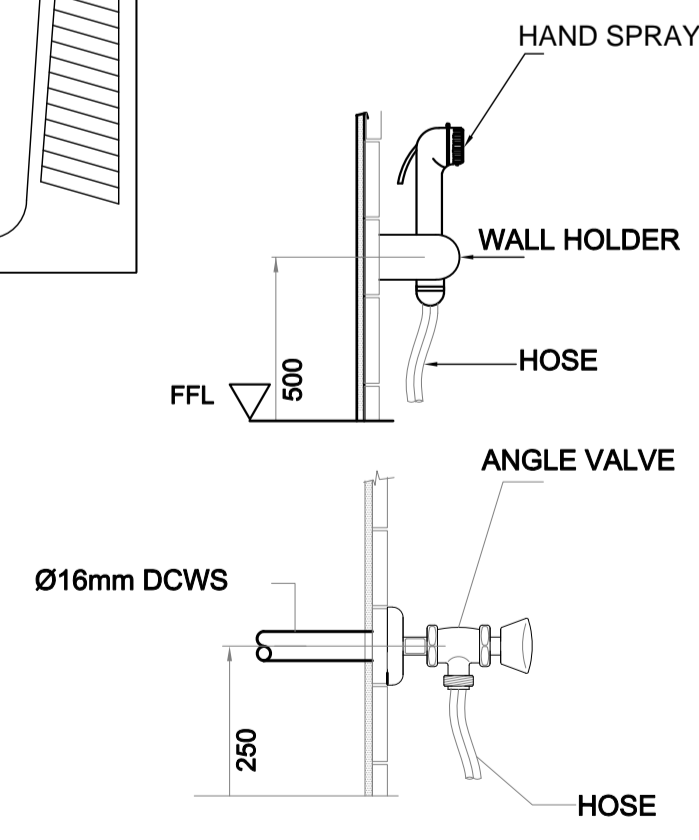
FIRE HOSE CABINET DETAIL



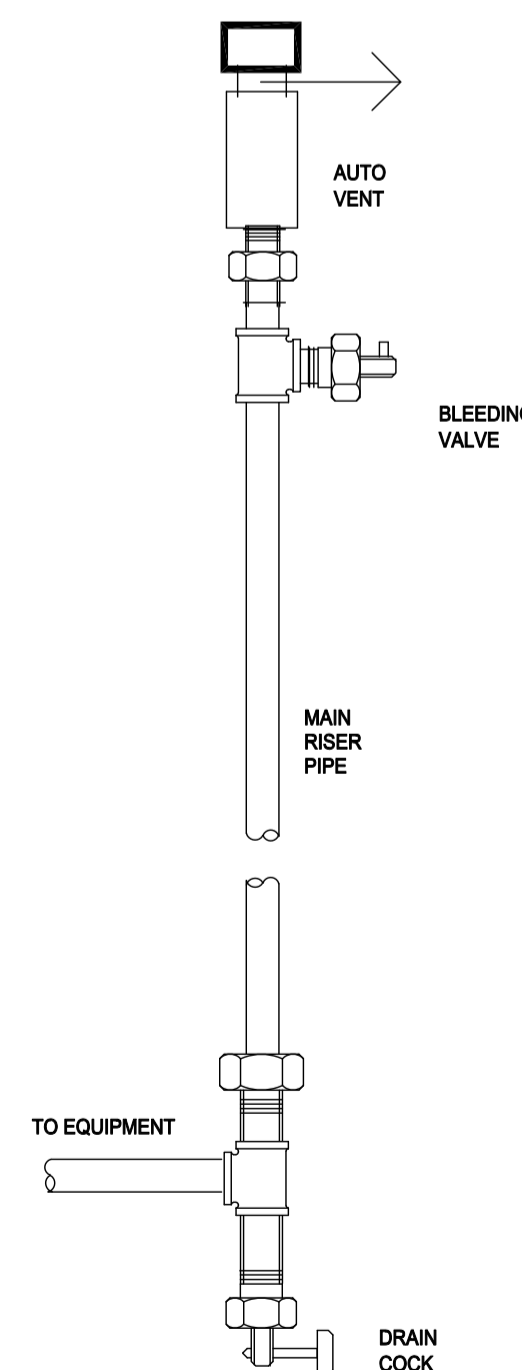
COLD WATER TANK



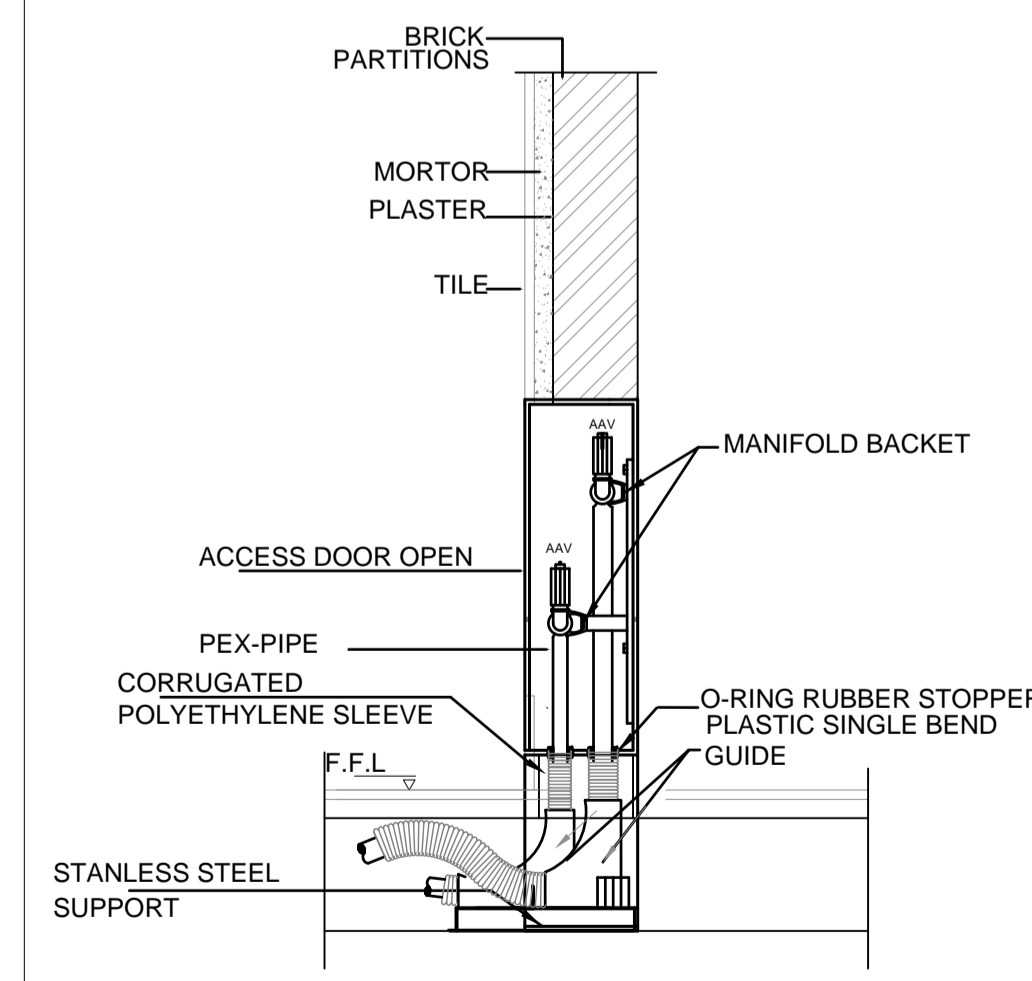
WC ESTERN TYPE DETAIL (WC-1)



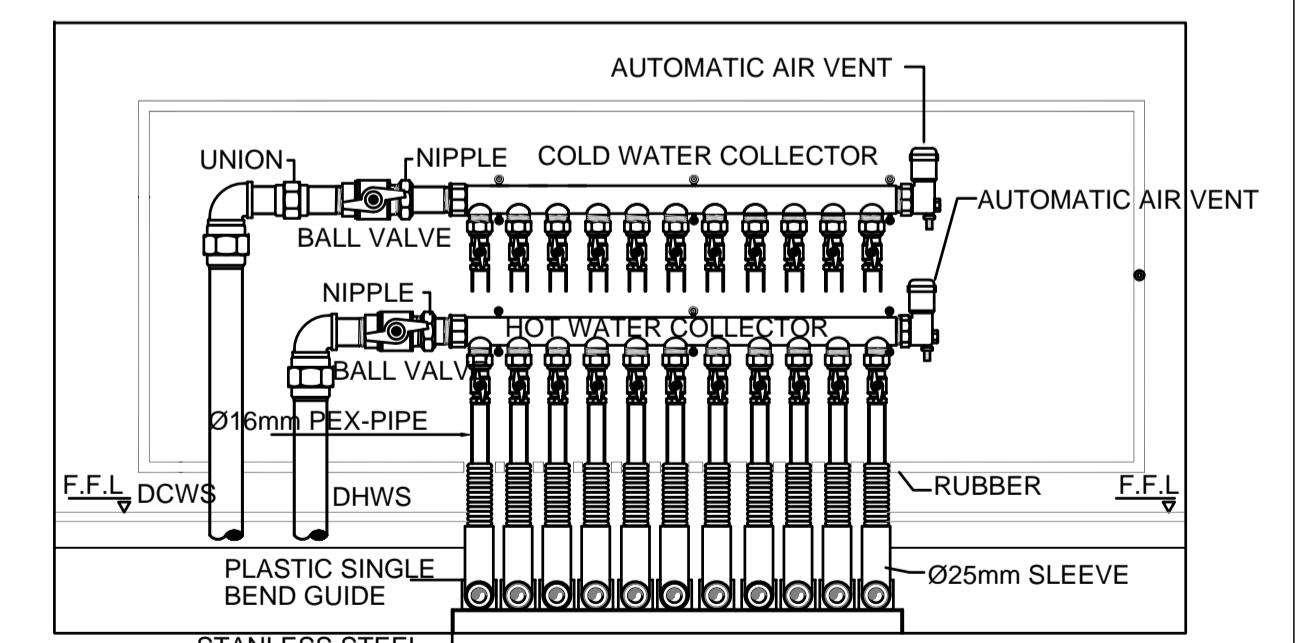
HAND SPRAY DETAIL FOR W.C



TYPICAL RISER FITTING DETAIL



SECTION IN MANIFOLD



ELEVATION VIEW

GENERAL WATER DISTRIBUTION CABINET DETAIL

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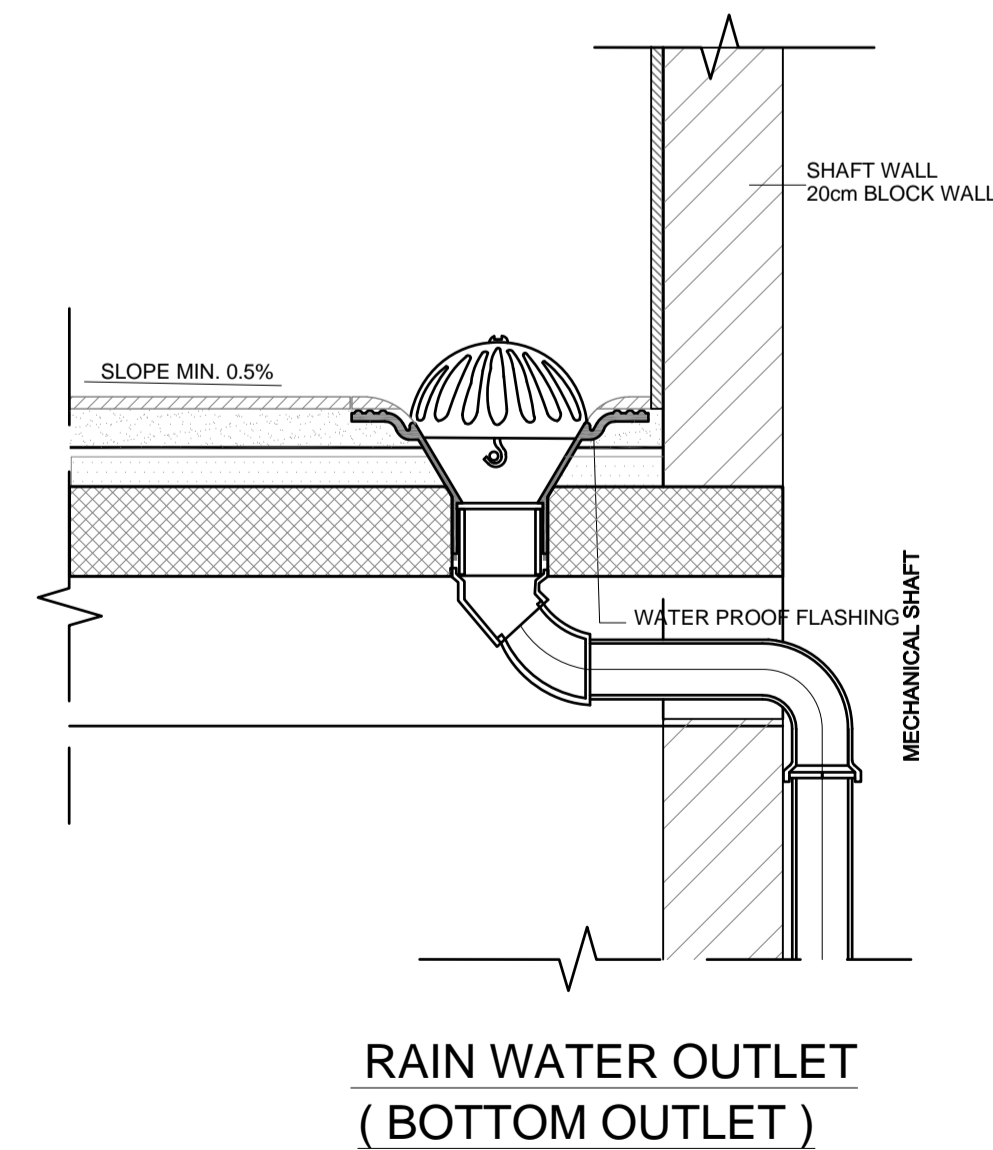
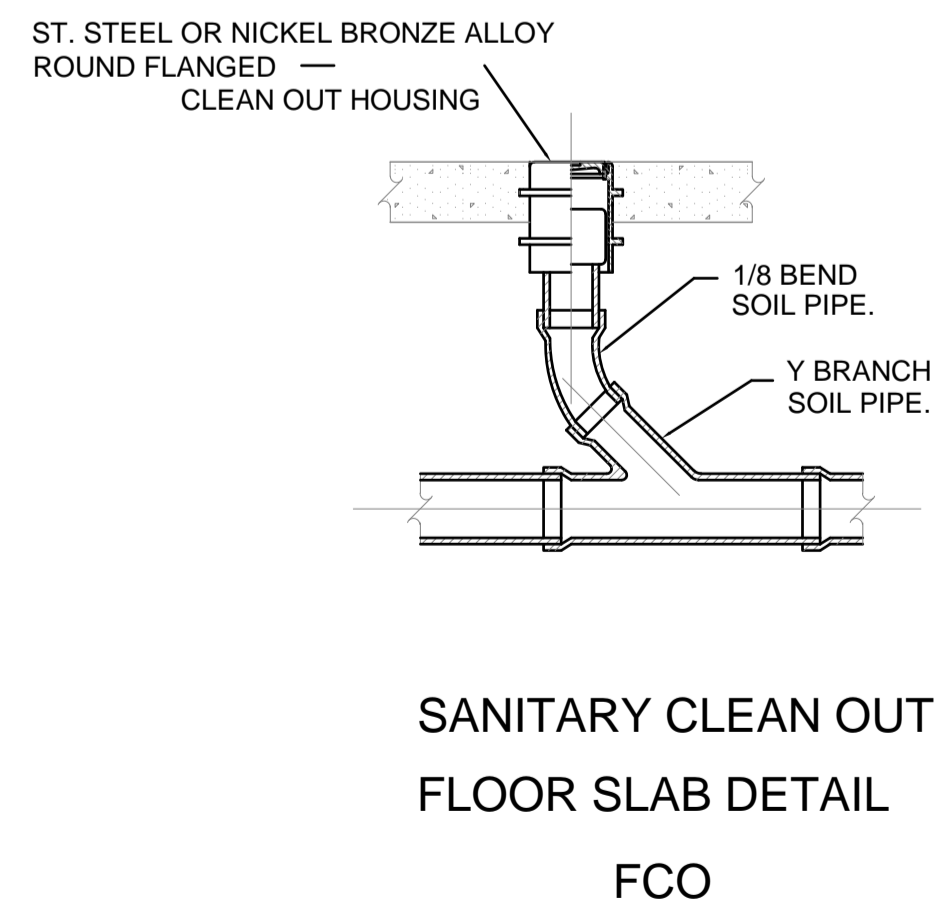
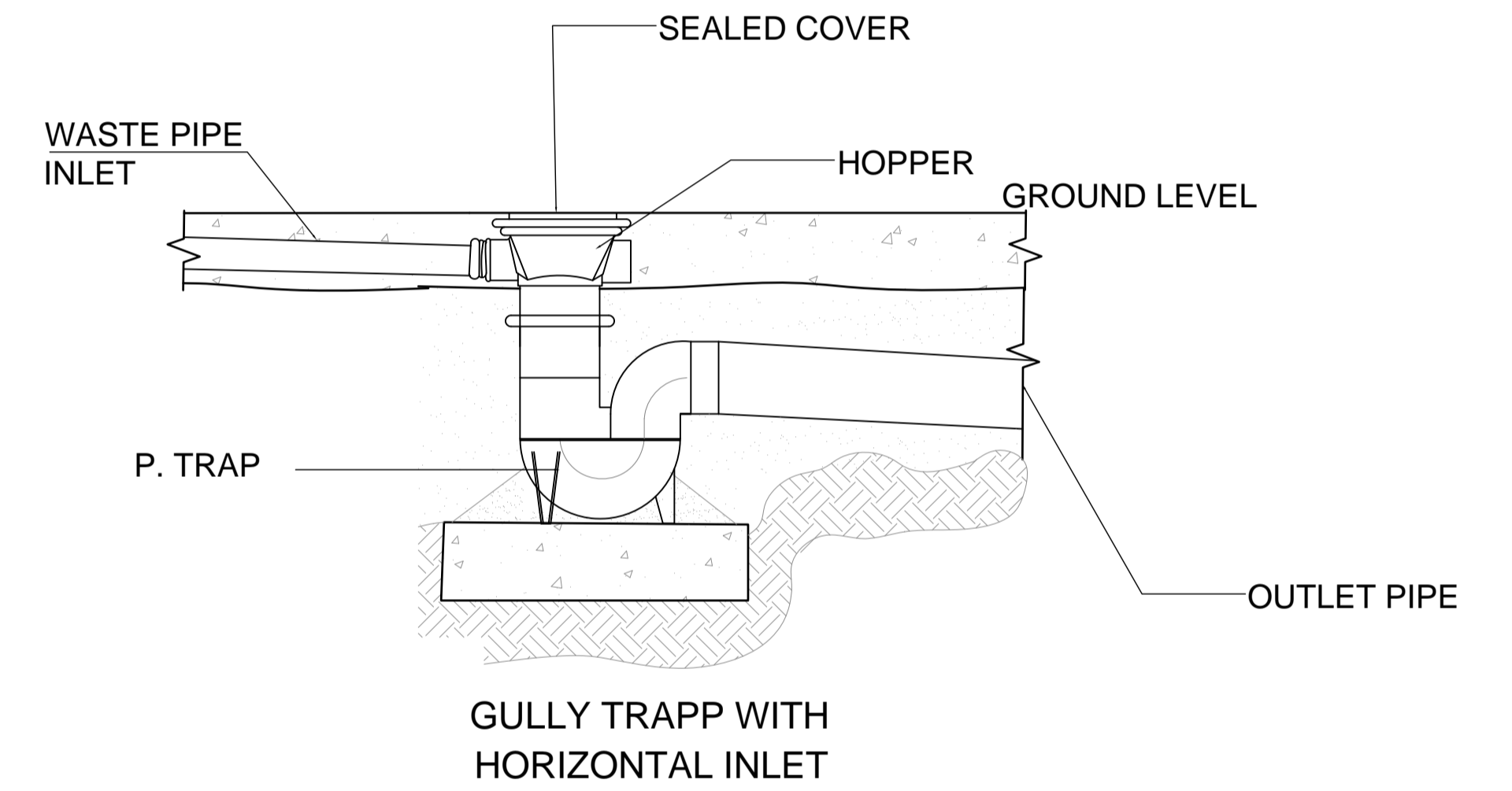
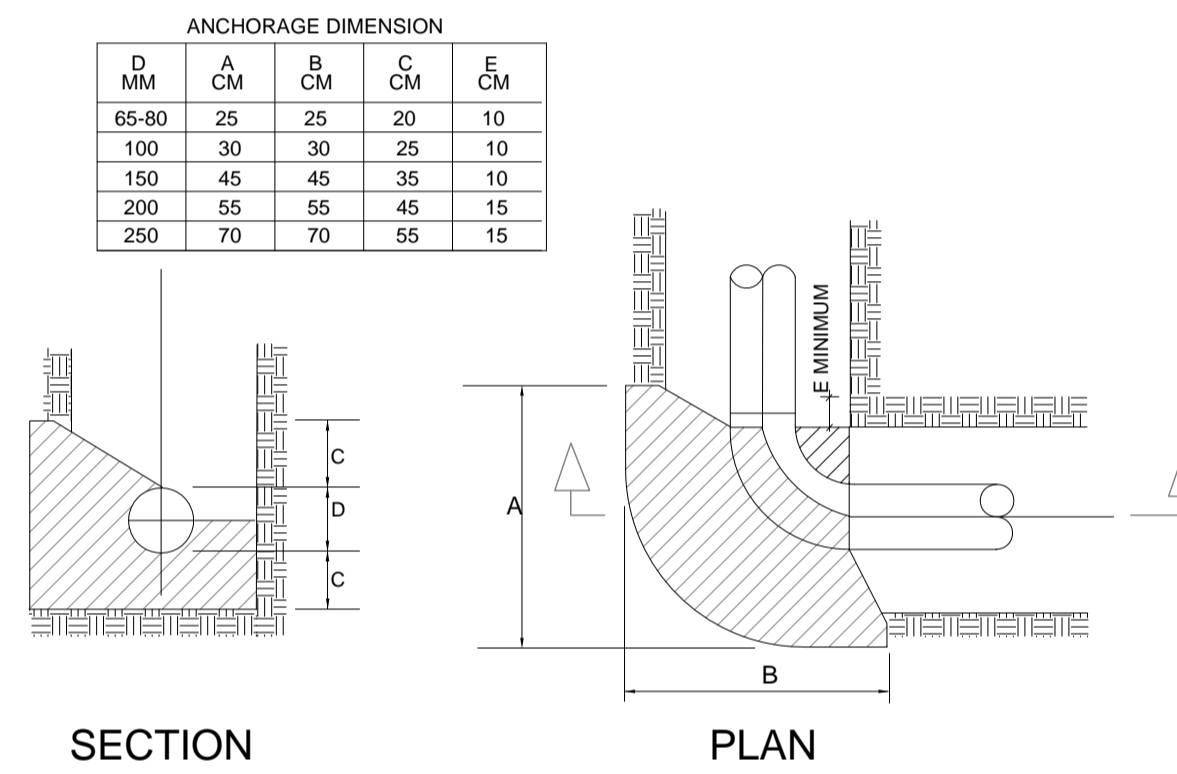
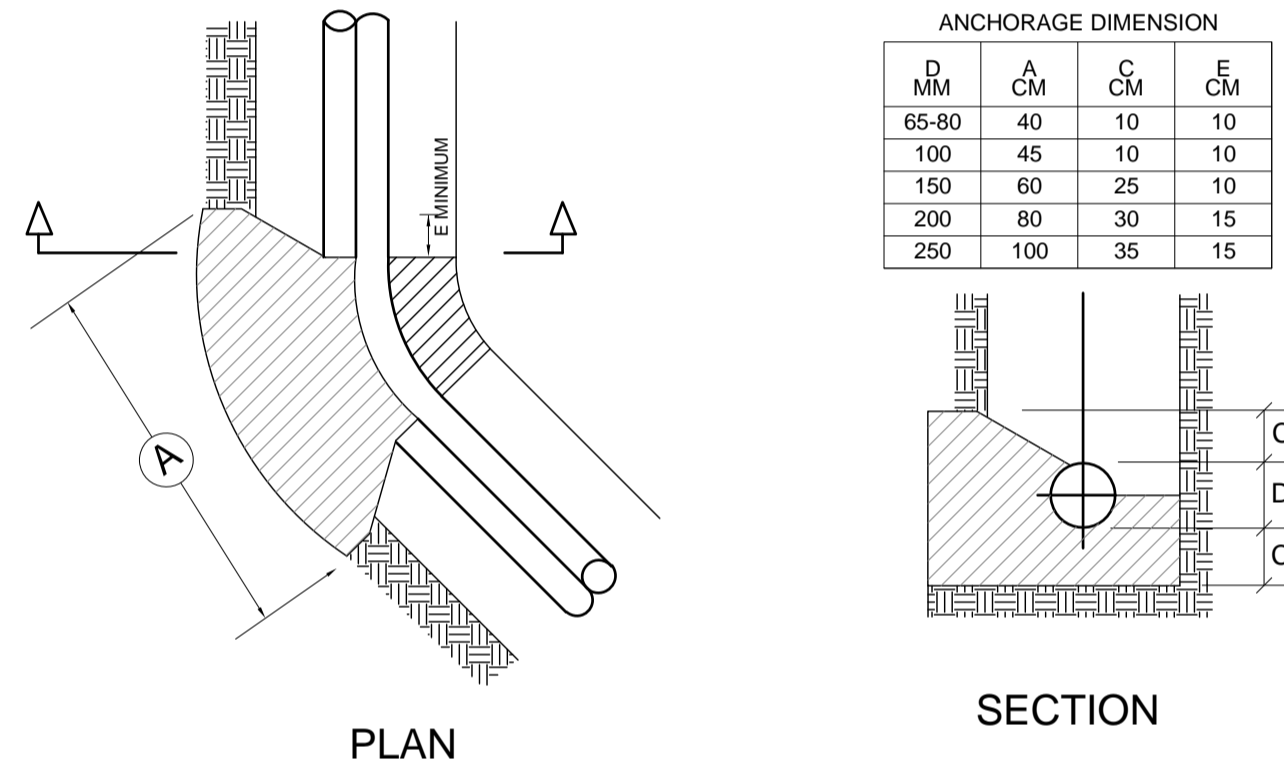
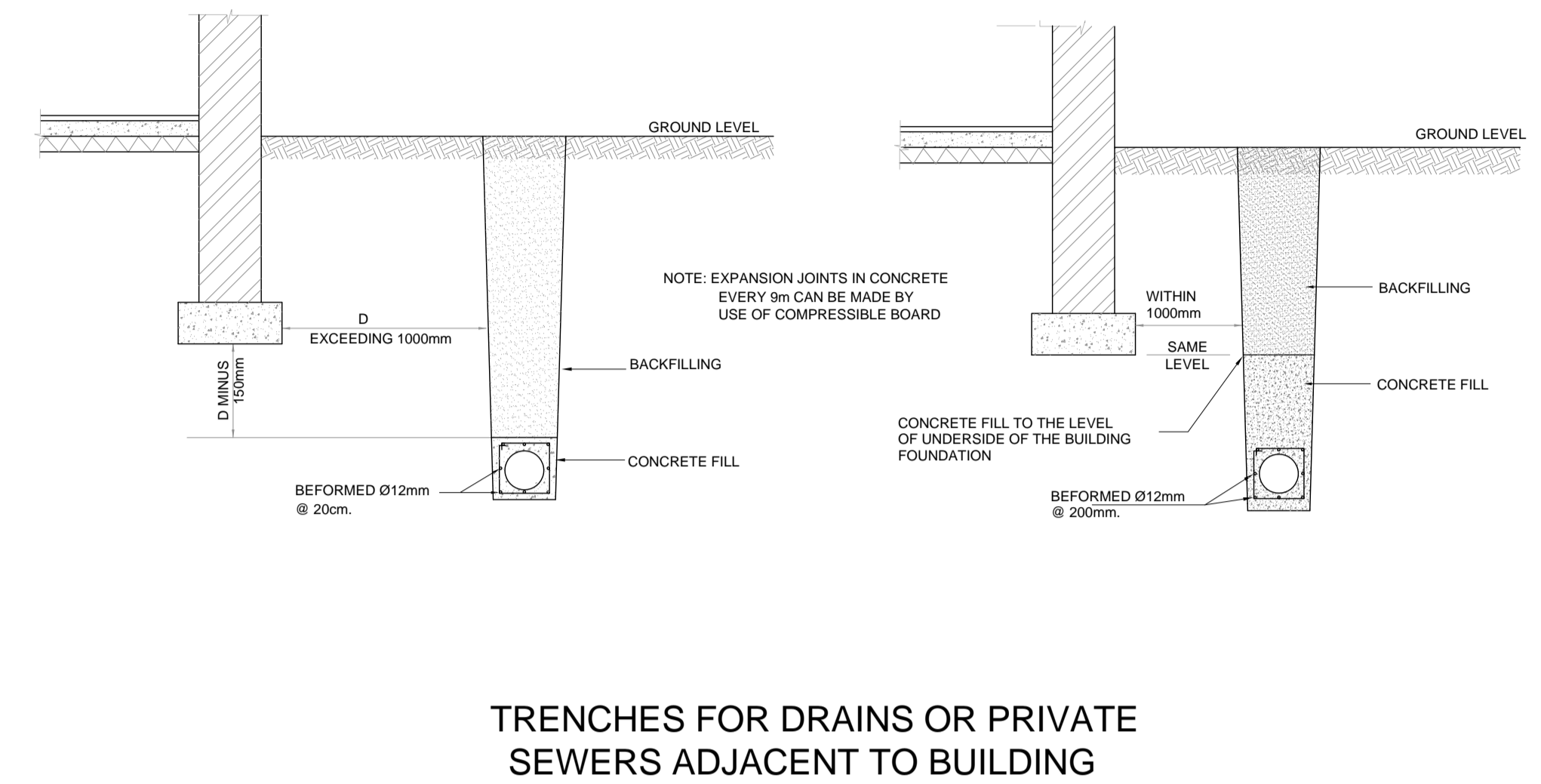
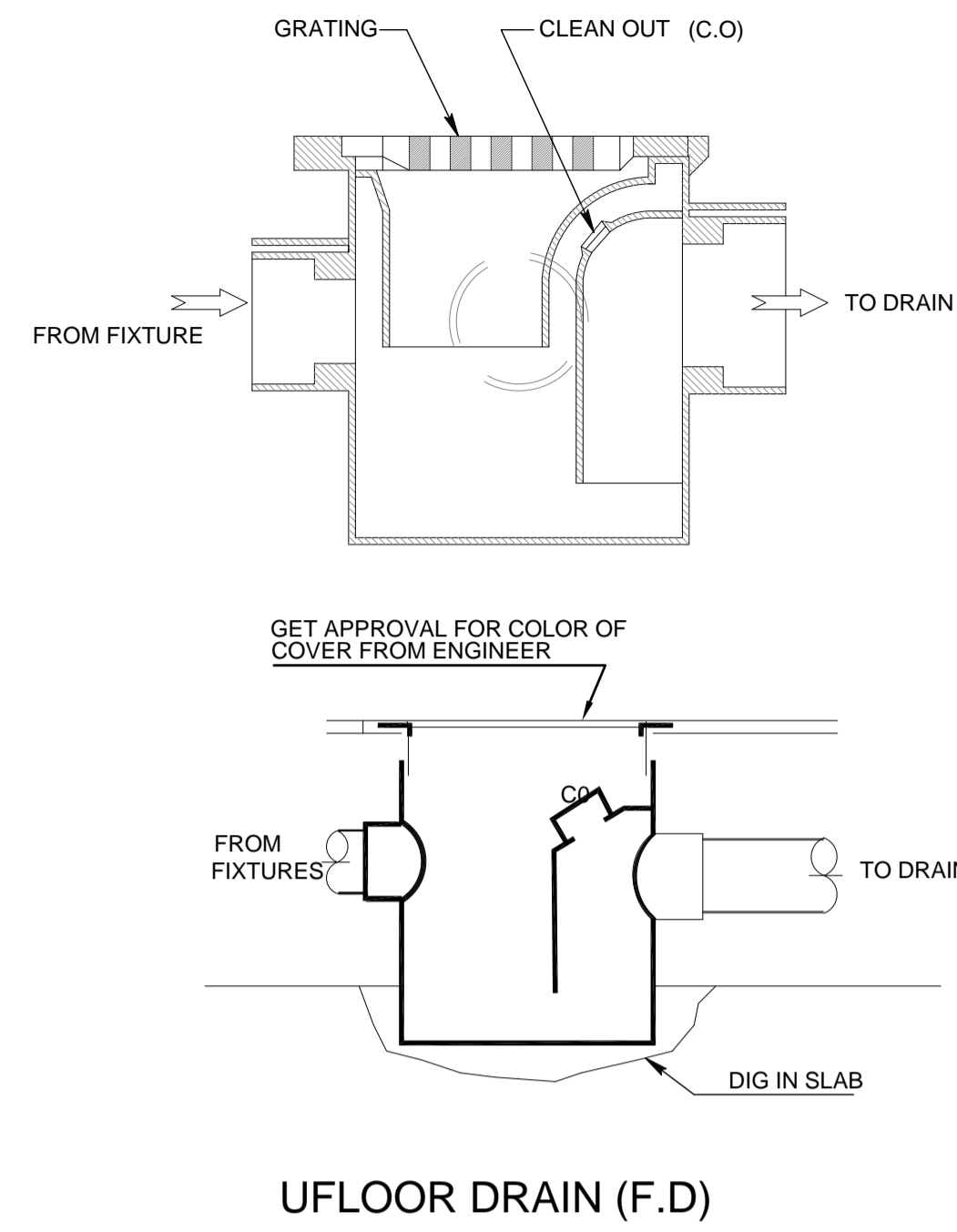
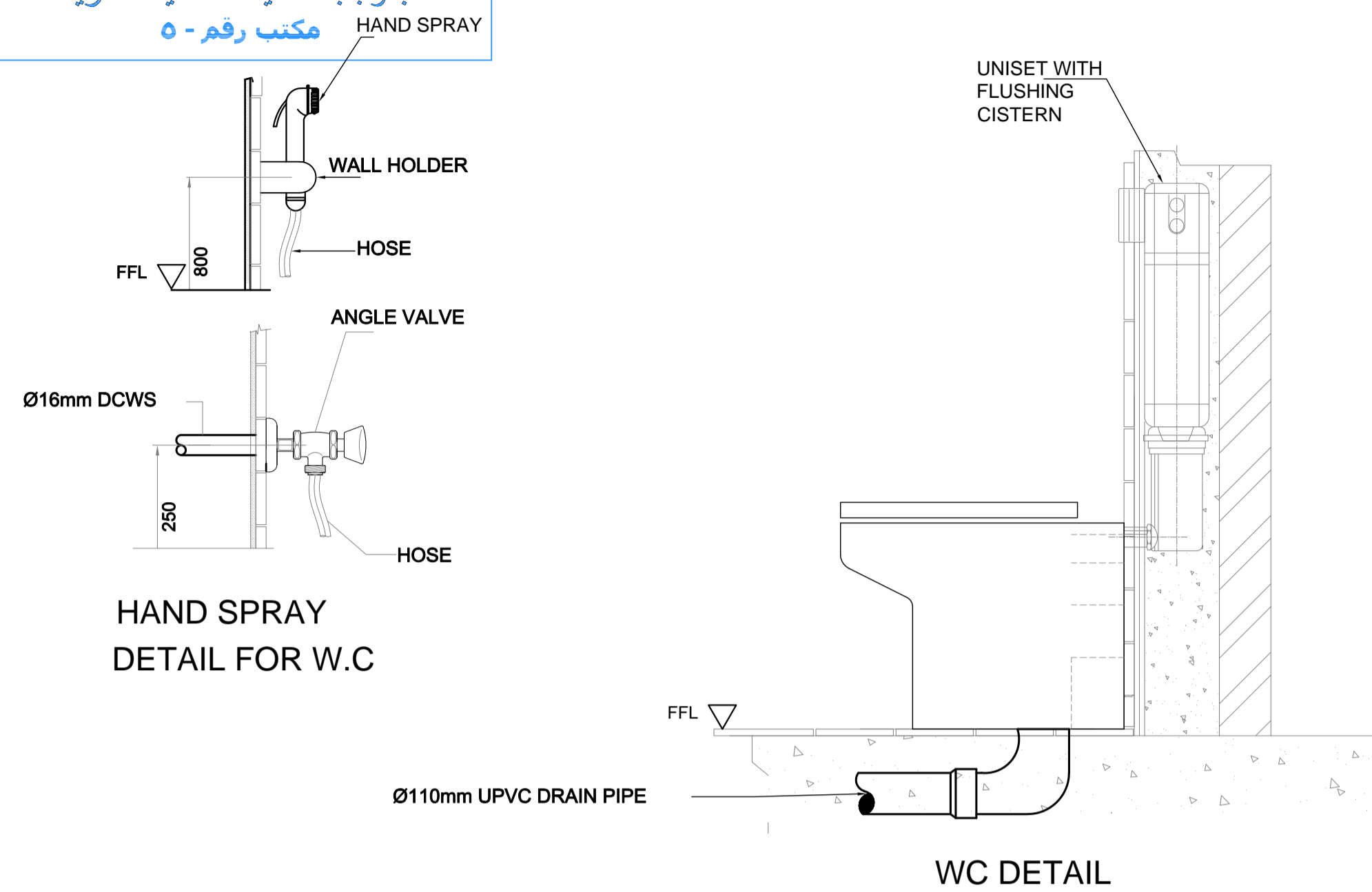
PHASE III  
PACKAGE 2  
Thahr Al Sarow Basic School For Boys (Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY PROJECT (USAID SKEP)

DRAWING NAME:  
MECHANICAL GENERAL DETAILS 02  
PLOT No 435  
LOCATION Thahr Al Sarow  
BASIN NO 4 Dair Alliat

Design: CAD  
Scale: N.T.S.  
Date: JUNE 2019  
Drawing Number: SKEP 14-GM502  
Checked: A.J.  
Approved: W.Z.  
Rev: 0



تم التصميم حسب الكودات المعتمدة بموجب التعليمات الفنية السارية مكتب رقم - ٥



REV.	DATE	REMARKS
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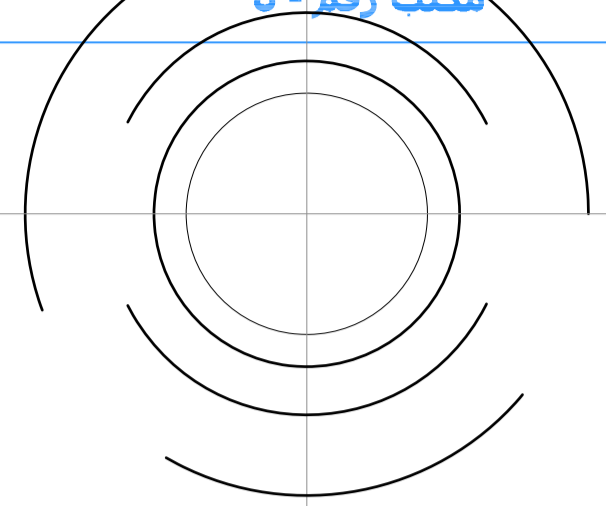
PHASE III	Thahr Al Sarow Basic School For Boys (Jerash)
PACKAGE 2	SCHOOLS FOR A KNOWLEDGE ECONOMY PROJECT (USAID SKEP)

DRAWING NAME:		
MECHANICAL GENERAL DETAILS 03		
DESIGN: CAD	DRAWN: CAD	CHECKED: A.J.
SCALE: N.T.S.	DATE: JUNE 2019	APPROVED: W.Z.
PLOT No 435	LOCATION Thahr Al Sarow	BASIN NO 4 Dair Alliat

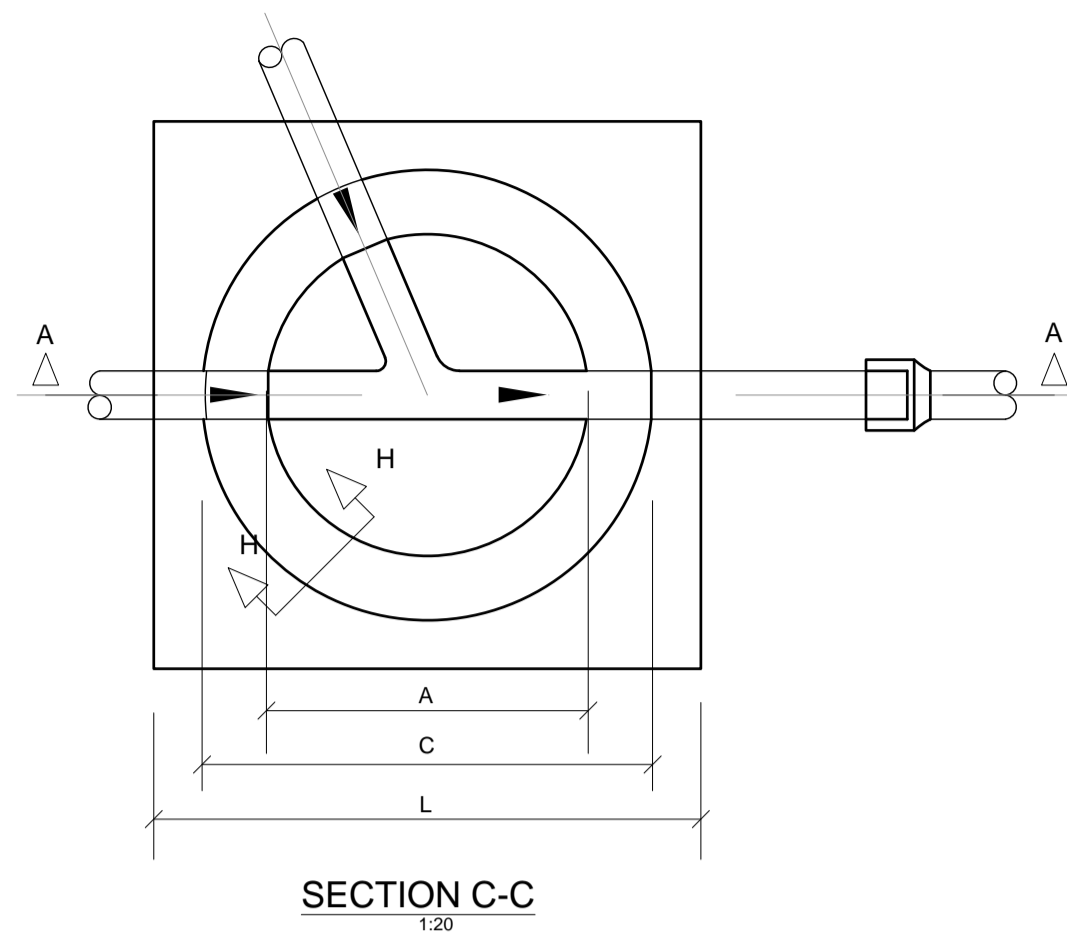
DRAWING NUMBER:		Rev.:
SKEP 14-GM503		0



تم التصميم حسب الكودات المعتمدة بموجب التعليلات الفنية السارية مكتب رقم- 0



MANHOLE COVER DETAIL NTS

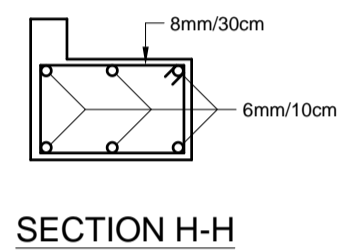


SECTION C-C 1:20

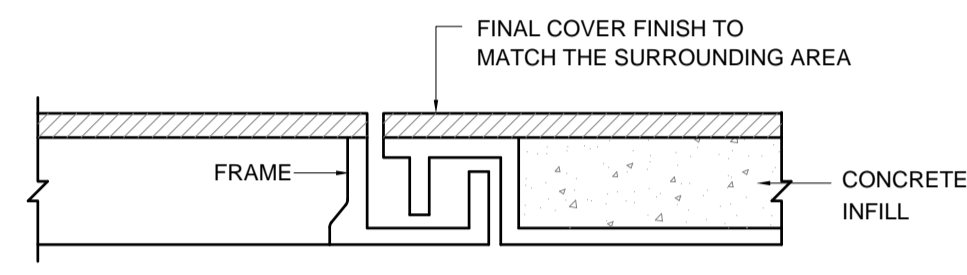
NOTE:-

\* MANHOLE COVER LEVEL SHOULD BE COORDINATE WITH THE FINAL FINISH LEVEL

PIPE DIAMETER D(mm)	B (mm)
150	350
200	450
250	550
300	650

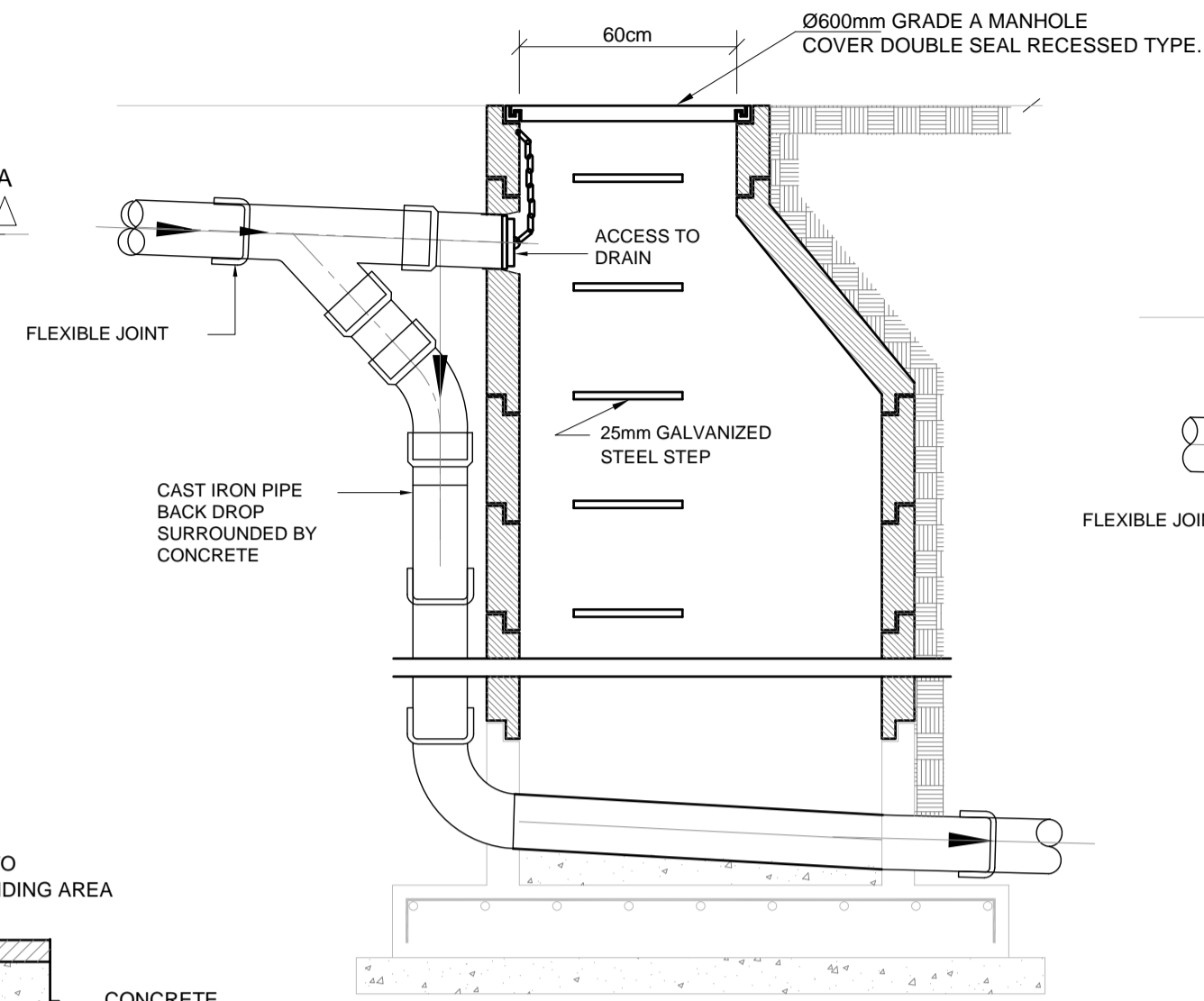


SECTION H-H

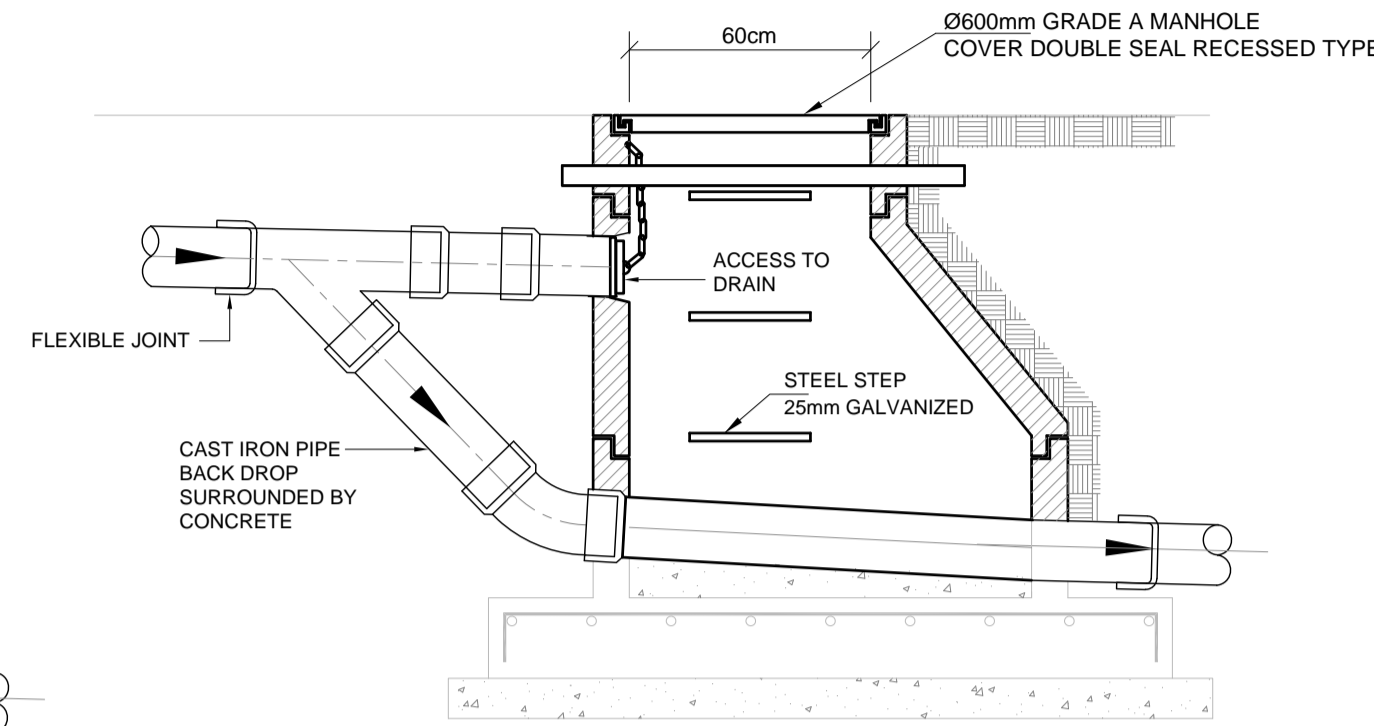


TYPICAL MANHOLE COVER DETAIL FOR ALL MANHOLES HAVE RECESSED COVER TYPE

SEWAGE MANHOLE DETAIL

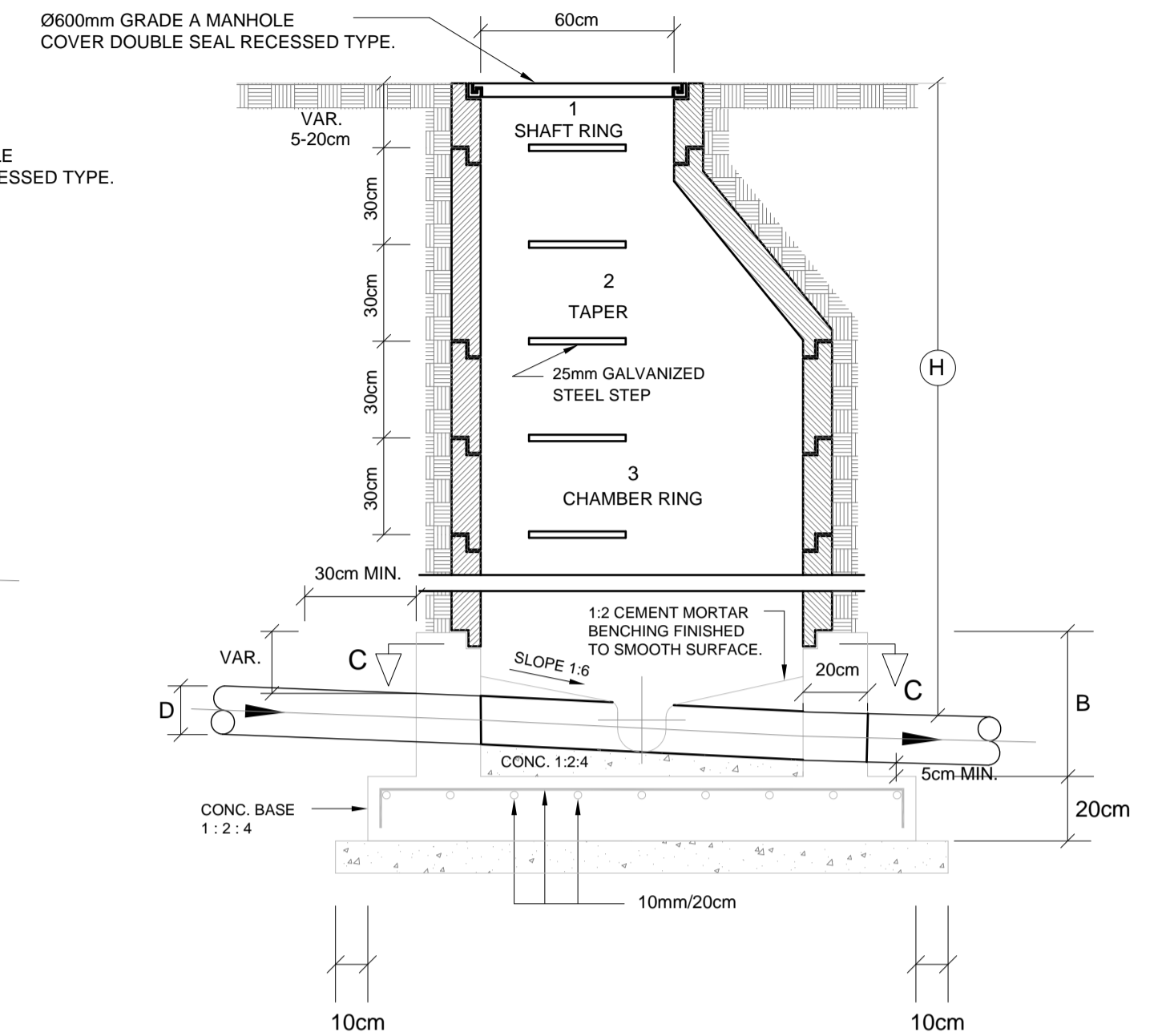


DROP MANHOLE TYPE (II)

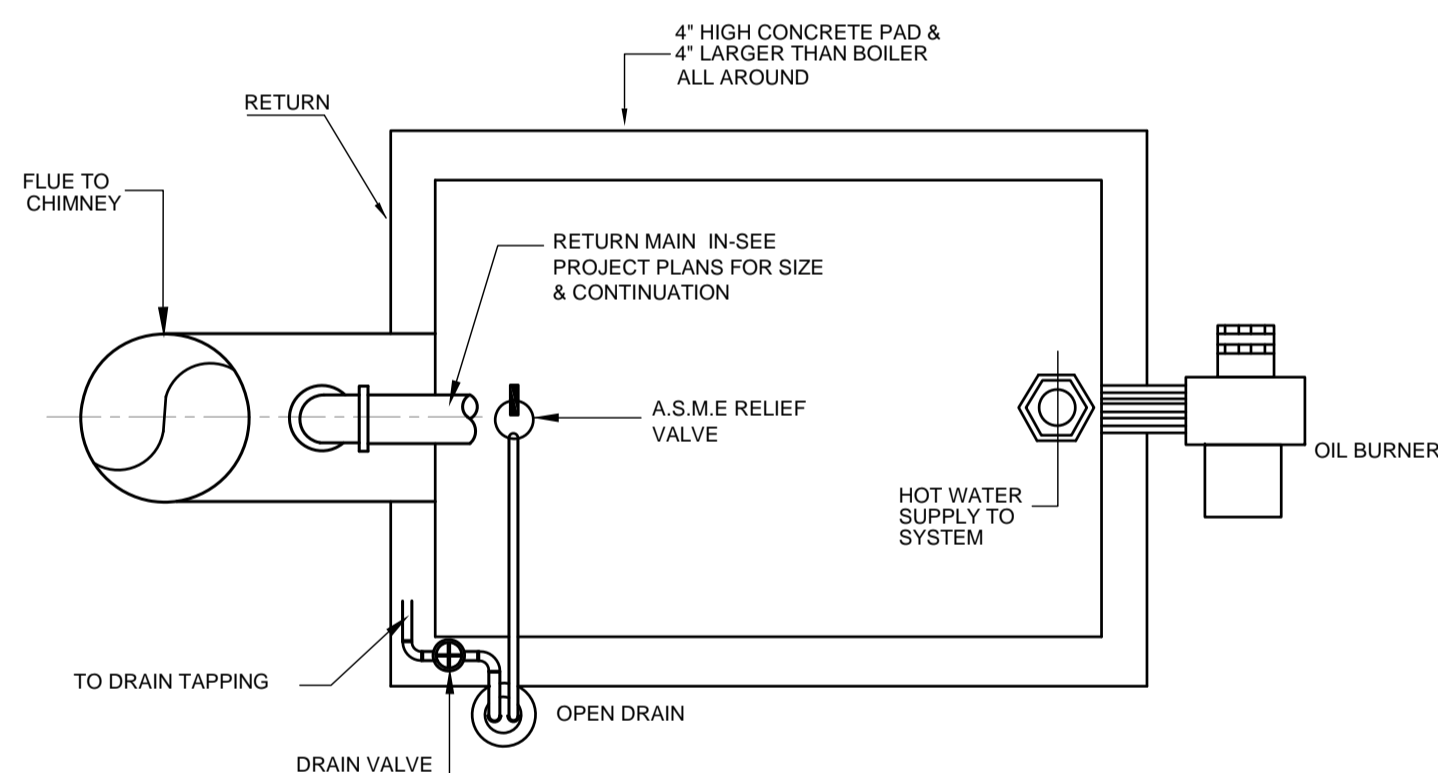


DROP MANHOLE TYPE (I)

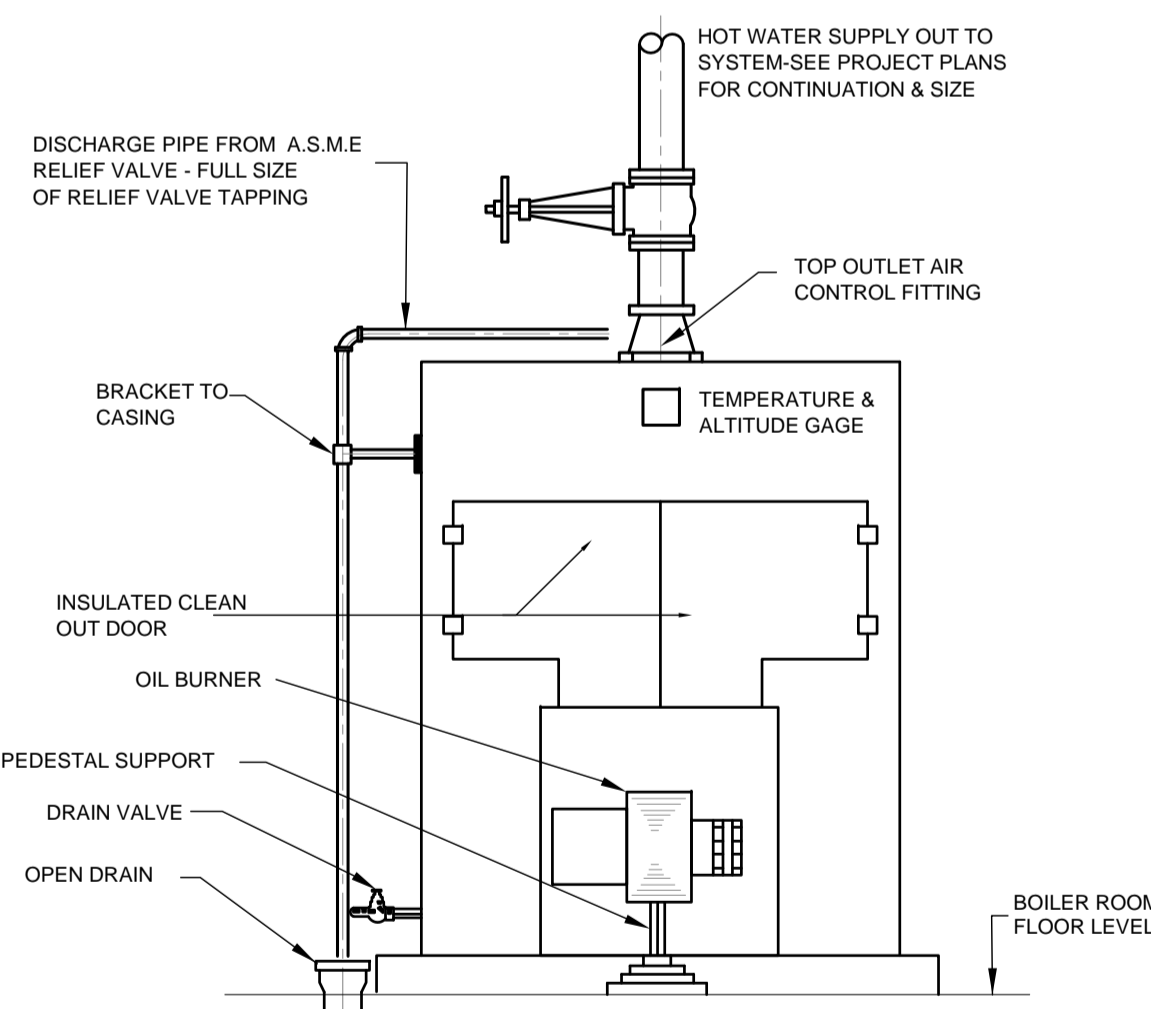
TRENCHES FOR DRAINS OR PRIVATE SEWERS ADJACENT TO BUILDING FOOTINGS



MANHOLE TYPE (II&III) SECTION A-A NTS

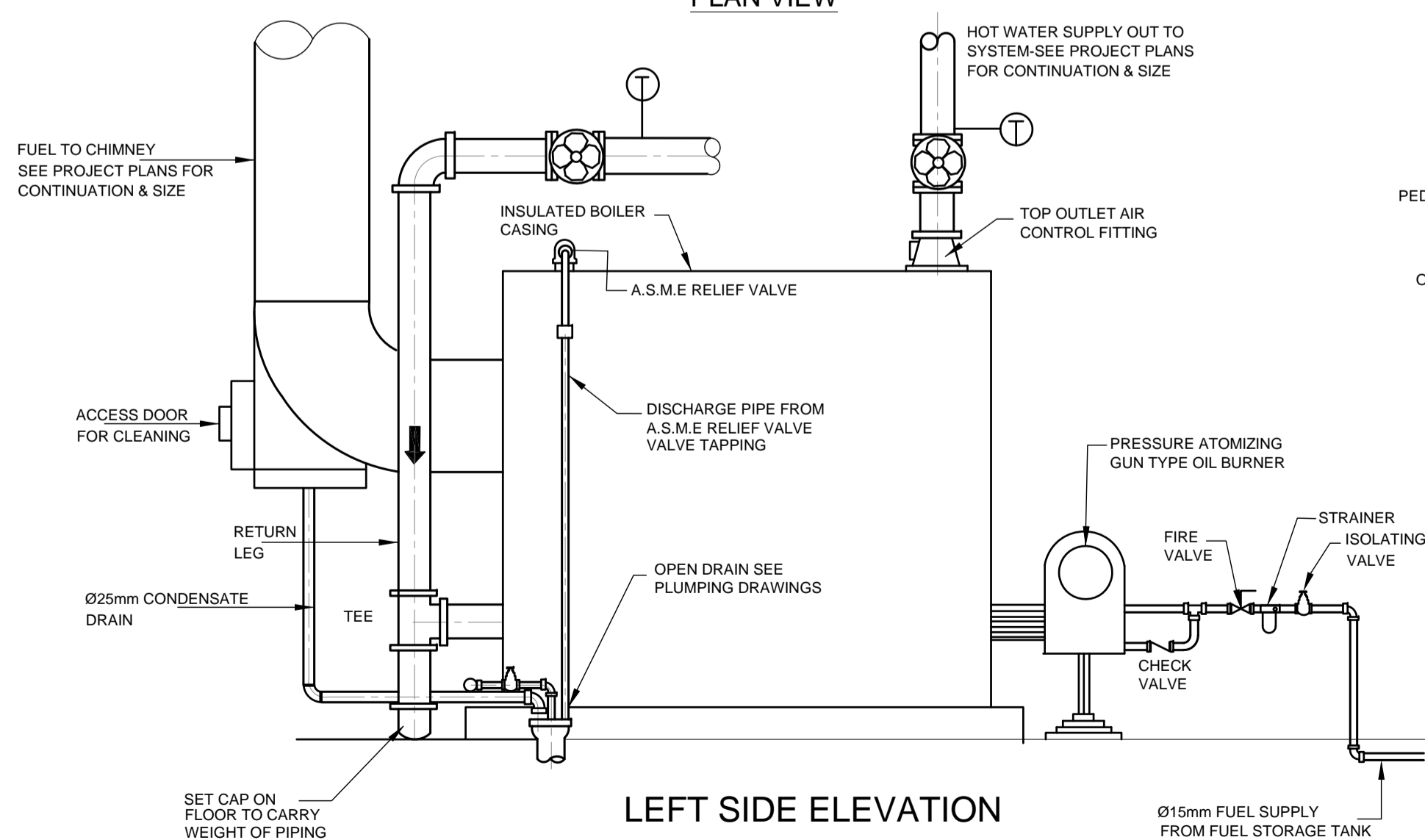


PLAN VIEW

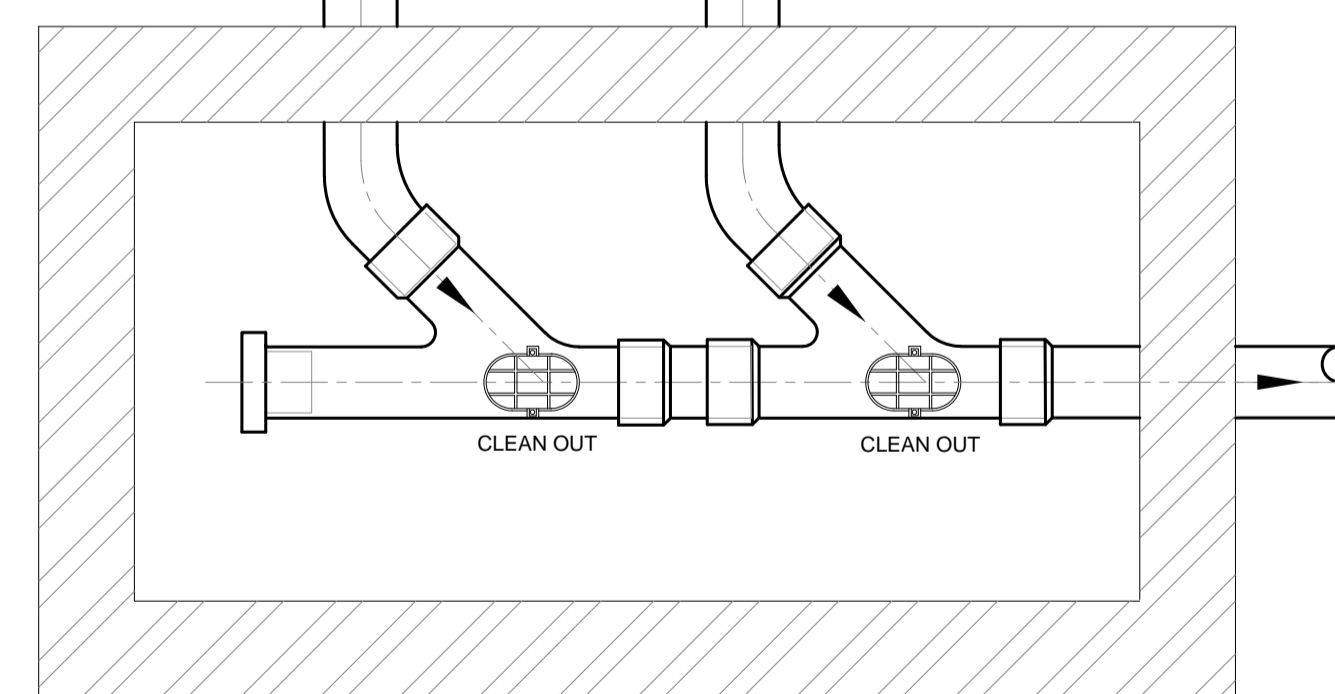


FRONT ELEVATION

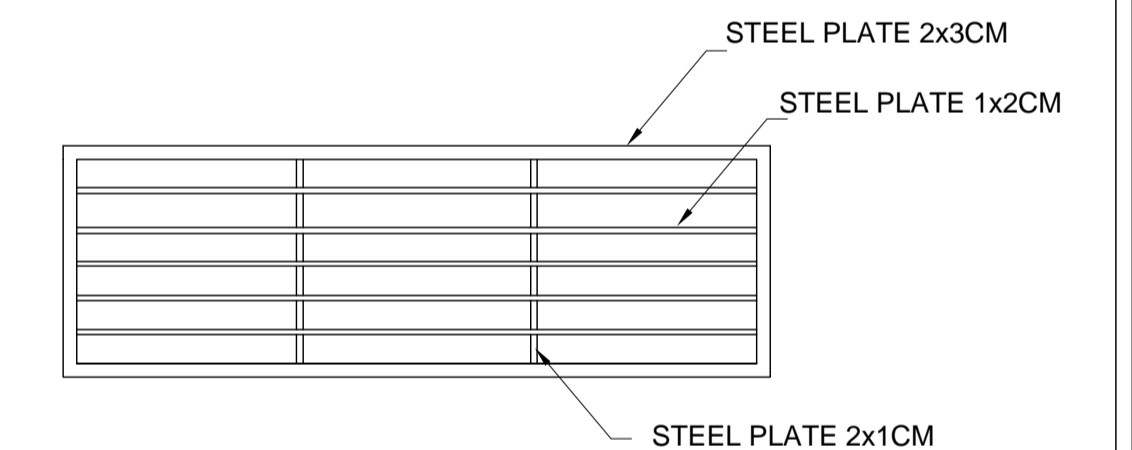
OIL FIRED, HOT WATER BOILER



LEFT SIDE ELEVATION



SEALED MANHOLE DETAIL N.T.S



TRENCH DRAIN DETAIL

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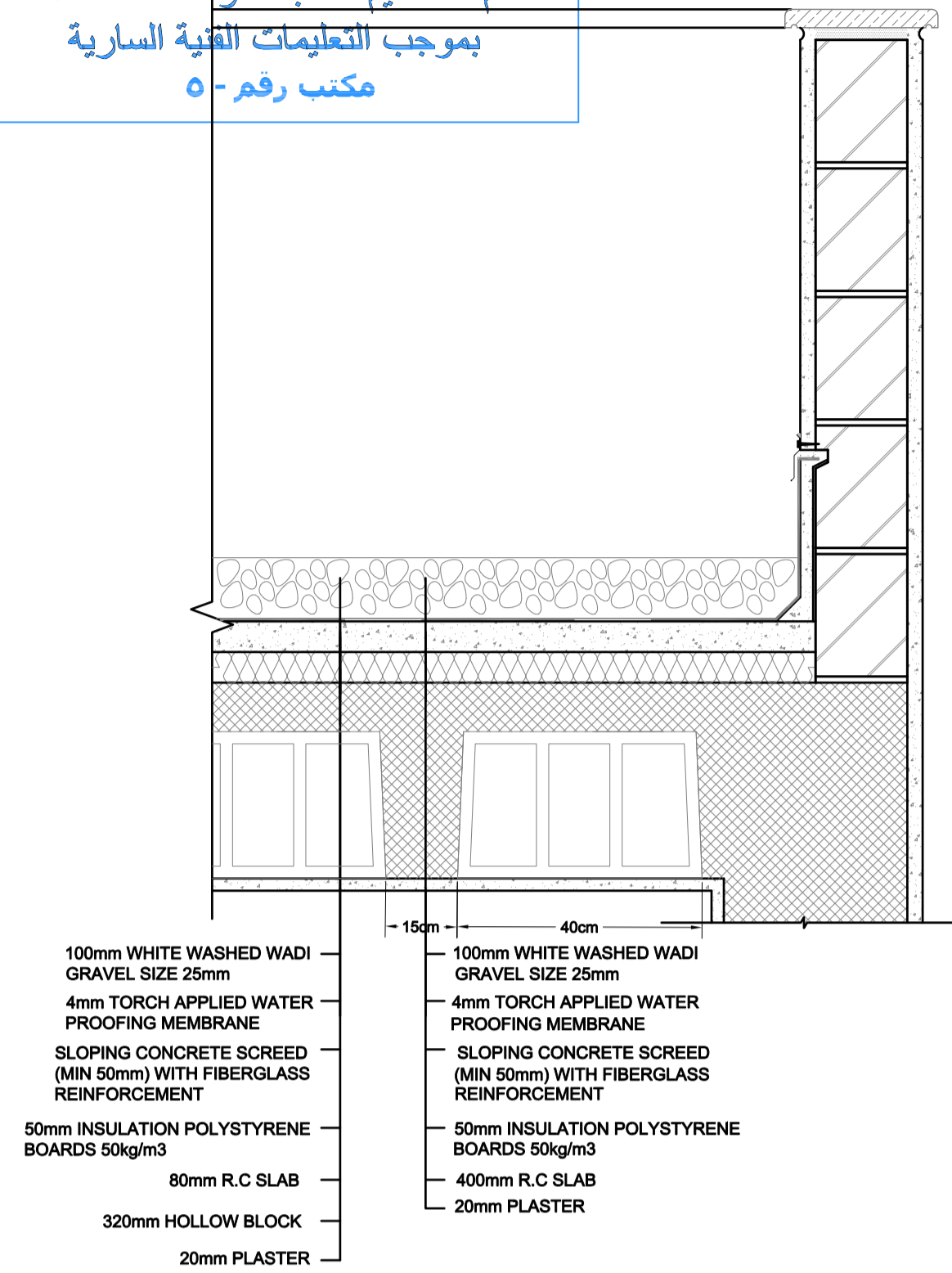
PHASE III	Thahr Al Sarow Basic School For Boys (Jerash)
PACKAGE 2	SCHOOLS FOR A KNOWLEDGE ECONOMY PROJECT (USAID SKEP)

DRAWING NAME:		MECHANICAL GENERAL DETAILS 04	
DESIGN:	CAD	DRAWN:	CAD
SCALE:	N.T.S.	DATE:	JUNE 2019
PLOT No	LOCATION	BASIN NO	DRAWING NUMBER:
435	Thahr Al Sarow	4 Dair Alliat	SKEP 14-GM504

Design:	Drawn:	Checked:	North:
CAD	CAD	A.J.	
SCALE:	Date:	Approved:	
N.T.S.	JUNE 2019	W.Z.	
DRAWING NUMBER:		Rev.:	
SKEP 14-GM504		0	



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U-VALUE CALCULATION			
SECTION IN ROOF/CONCRETE HOLLOW BLOCK			
Composition	(d)Thickness (m)	(k) Thermal Conductivity (W/m.c)	( R ) Thermal Resistance (m2.c/W)
WHITE WASHED WADI GRAVEL SIZE	0.1	0.3	0.333
WATER PROOFING MEMBRANE	0.004	0.19	0.021
CONCRETE SCREED	0.05	1.75	0.0286
50mm INSULATION POLYSTYRENE BOARDS 50kg/m3	0.05	0.032	1.56
80 mm R. C SLAB	0.08	1.85	0.0432
HOLLOW BLOCK	0.32	0.95	0.337
PLASTER	0.02	0.72	0.028
Outside Resistance	-	-	0.04
Inside Resistance	-	-	0.1
TOTAL R=		2.49	
U1 =		0.401	
A1 =		0.40	

U-VALUE CALCULATION			
SECTION IN ROOF/RIB			
Composition	(d)Thickness (m)	(k) Thermal Conductivity (W/m.c)	( R ) Thermal Resistance (m2.c/W)
WHITE WASHED WADI GRAVEL SIZE	0.1	0.3	0.333
WATER PROOFING MEMBRANE	0.004	0.19	0.021
CONCRETE SCREED	0.05	1.75	0.0286
50mm INSULATION POLYSTYRENE BOARDS 50kg/m3	0.05	0.032	1.56
80 mm R. C SLAB	0.08	1.85	0.0432
PLASTER	0.02	0.72	0.028
Outside Resistance	-	-	0.04
Inside Resistance	-	-	0.1
TOTAL R=		2.33	
U1 =		0.429	
A1 =		0.15	

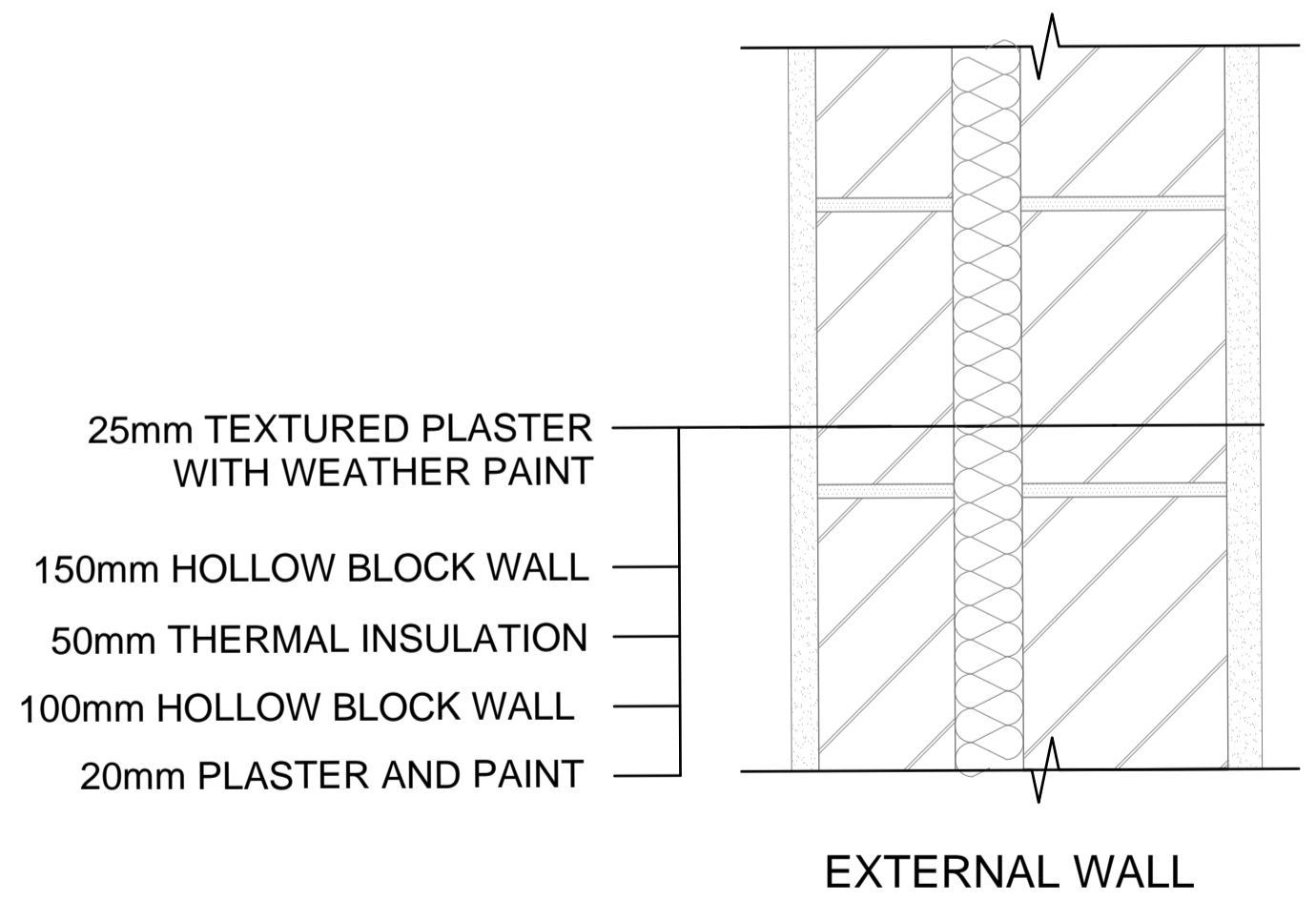
$$U = \frac{A_1 \times U_1 + A_2 \times U_2}{A_{TOTAL}}$$

OVER ALL FOR ROOF

$$U_{11} = 0.41 \text{ W/m.C}^{\circ}$$

OVER ALL USED

$$U_{12} = 0.55 \text{ W/m.C}^{\circ}$$



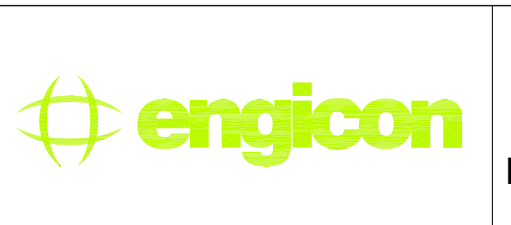
U-VALUE CALCULATION			
Composition	(d)Thickness (m)	(k) Thermal Conductivity (W/m.c)	( R ) Thermal Resistance (m2.c/W)
PLASTER	0.02	0.72	0.0278
HOLLOW BLOCK	0.10	0.9	0.09
EXTRUDED POLYSTYRENE	0.05	0.032	1.56
HOLLOW BLOCK	0.15	0.9	0.166
PLASTER	0.025	0.72	0.0347
Outside Resistance	-	-	0.04
Inside Resistance	-	-	0.13
TOTAL R=		2.051	
U = 0.49		W/m.C <sup>2</sup>	
SAFETY FACTOR 15%=		0.56 W/m.C <sup>2</sup>	

Uoverall = (UoX Ao + UwX Aw + UdX Ad) / A = (2.8X482.4 + 0.49X4080.8 + 5.7X52.5) / (482.4 + 4080.8 + 52.5)

Uo: Thermal transmittance for windows  
Ao: Windows area, Ad: Doors area,  
Ud: Thermal transmittance for doors  
Aw: Area of the wall except Ao  
Uoverall = 0.791

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PHASE III  
PACKAGE 2  
Thahr Al Sarow Basic School For Boys (Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY PROJECT (USAID SKEP)

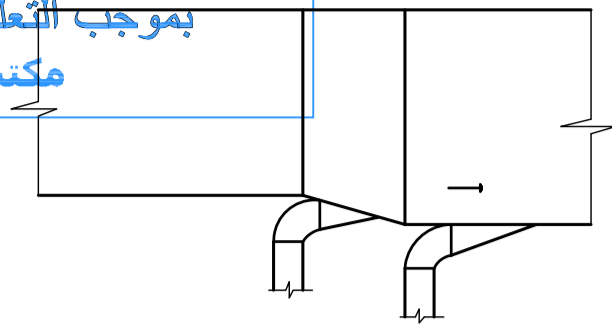
DRAWING NAME:  
MECHANICAL GENERAL DETAILS 05  
PLOT No 435  
LOCATION Thahr Al Sarow  
BASIN NO 4 Dair Alliat

Design: CAD  
Scale: N.T.S.  
Date: JUNE 2019  
Checked: A.J.  
Approved: W.Z.  
Drawing Number: SKEP 14-GM505  
Rev.: 0

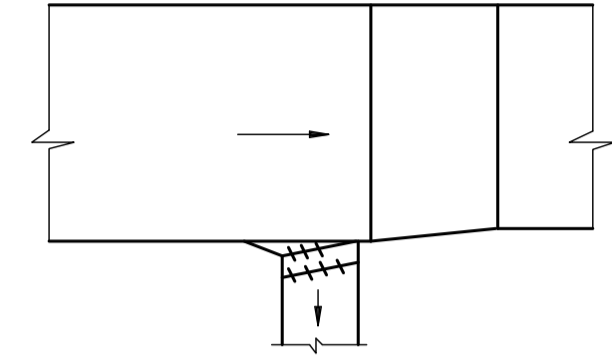


تم التصميم حسب الكودات المعتمدة بموجب التعليمات الفنية السارية

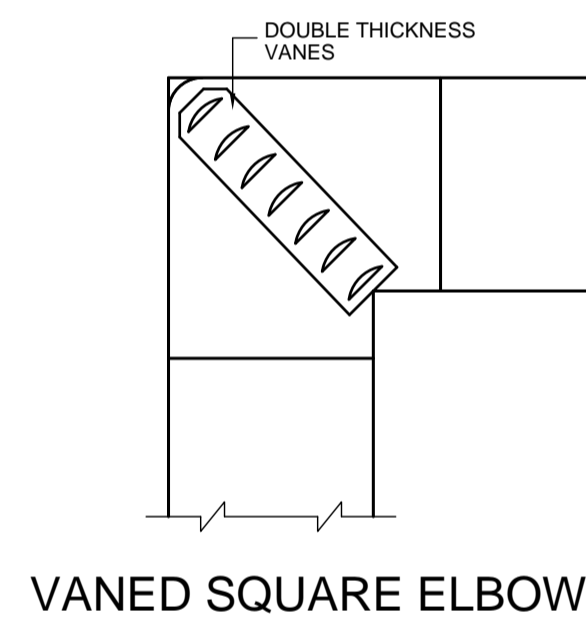
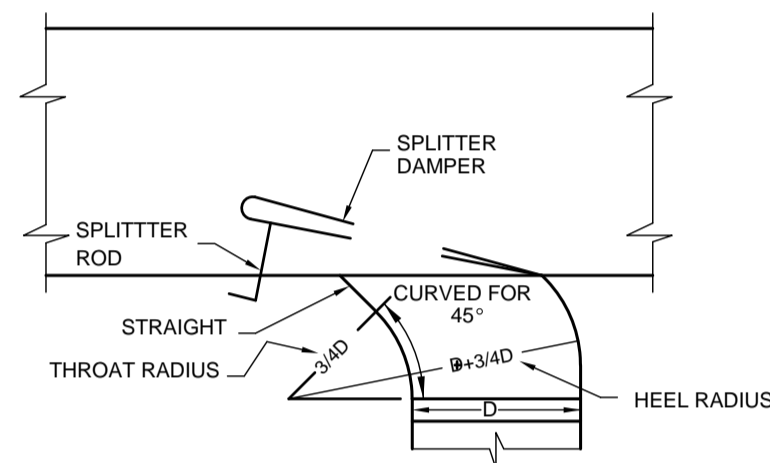
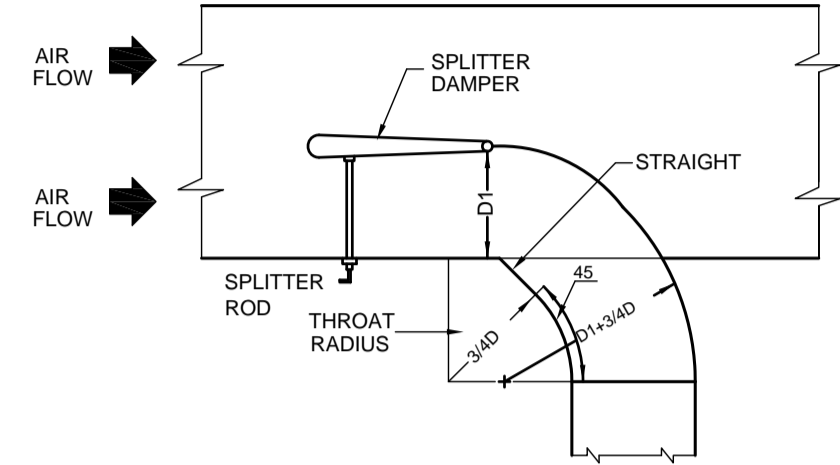
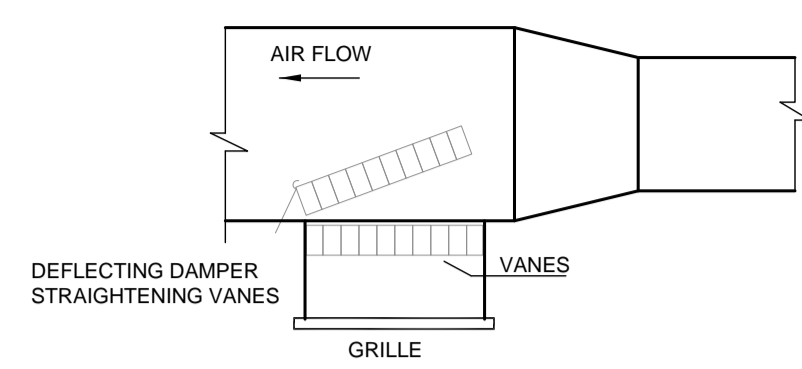
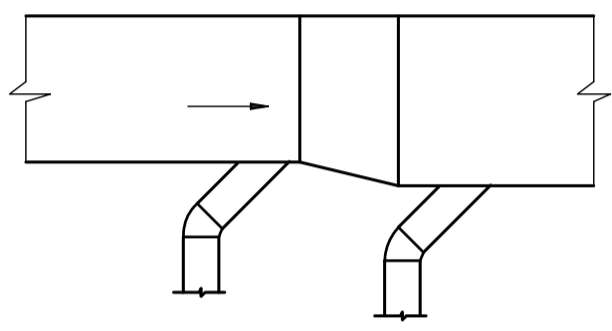
RETURN AND EXHAUST CONNECTION: SMALL BRANCH TO LARGE MAIN HAVING VELOCITY MORE THAN 1200 FPM



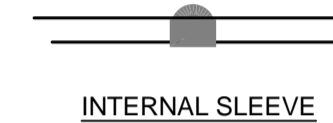
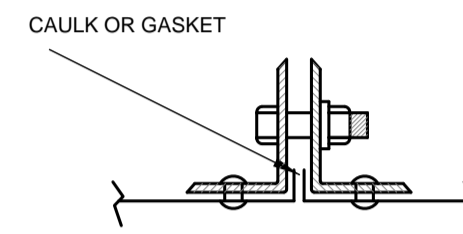
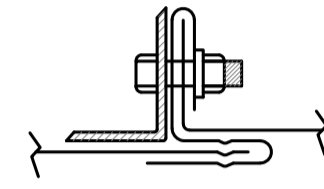
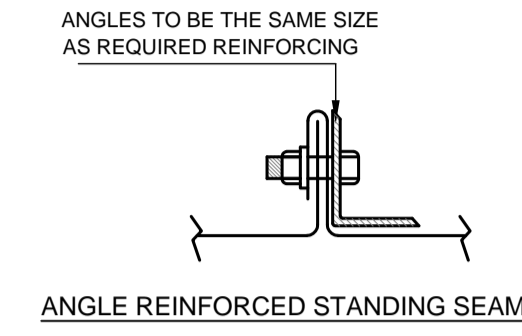
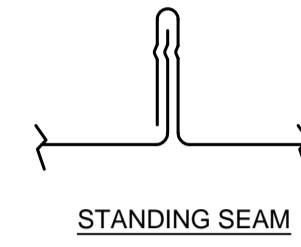
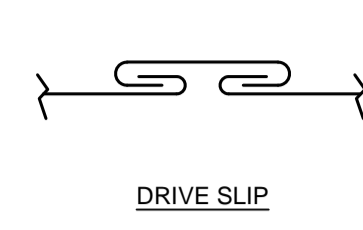
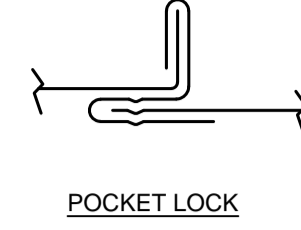
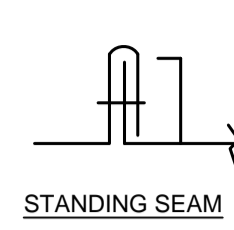
HORIZONTAL OR RISER BRANCH TAKEOFF WHERE TRUNK VELOCITY IS GREATER THAN 1200 FPM



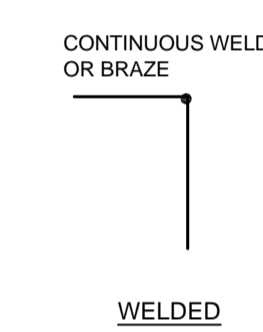
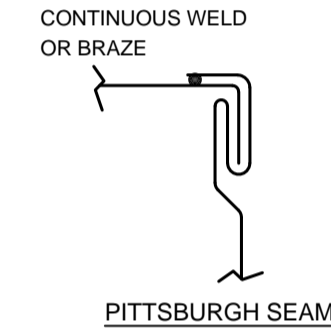
RETURN AND EXHAUST CONNECTION. WHERE MAIN DUCT VELOCITY IS LESS THAN 1200 FPM



TYPICAL TAKE-OFFS

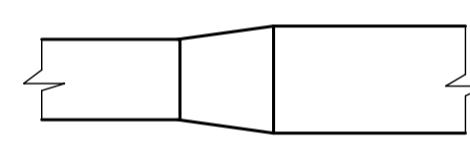


TRANSVERSE FLUSH SEAMS

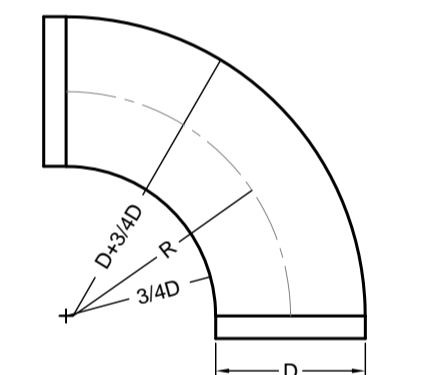
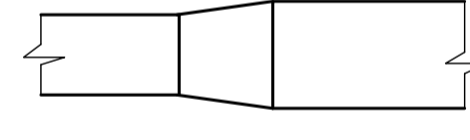


LONGITUDINAL JOINTS

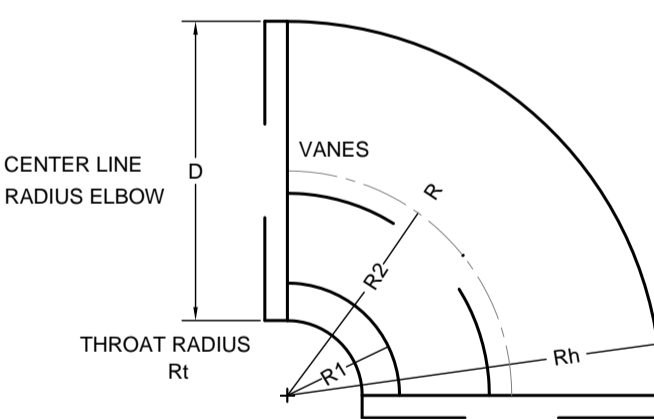
RETURN OR EXHAUST TWO SIDED EXPANSION SLOPE 1:7 ALLOWABLE 1:4



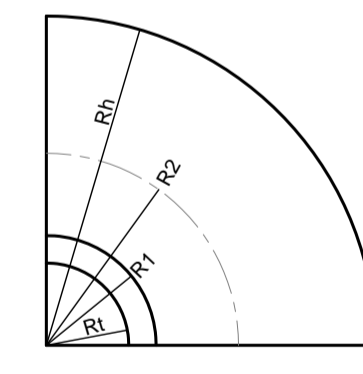
RETURN OR EXHAUST TWO SIDED EXPANSION OR CONTRACTION SLOPE 1:7



FULL RADIUS ELBOW

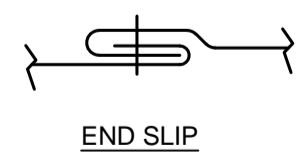


SHORT RADIUS ELBOW

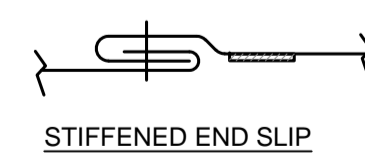


SHORT ELBOW WITH NO THROAT RADIUS

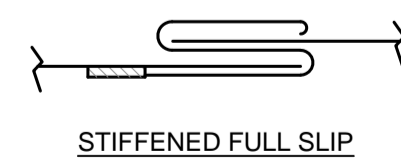
RECTANGULAR DUCT ELBOWS DETAILS (HAVC DETAILS)



END SLIP

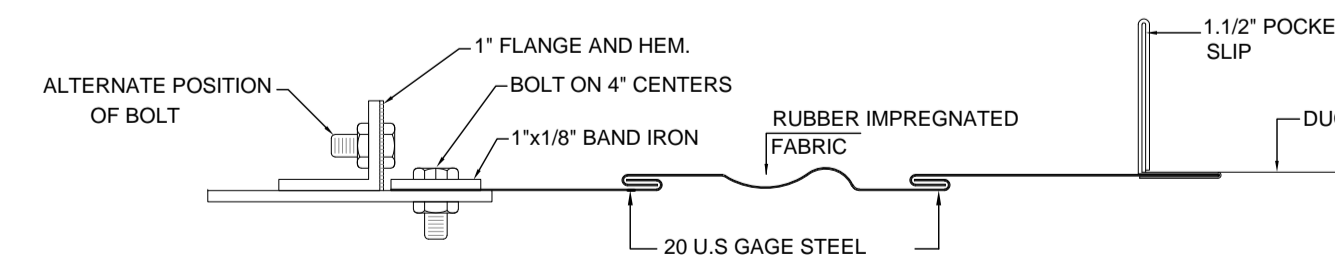


STIFFENED END SLIP

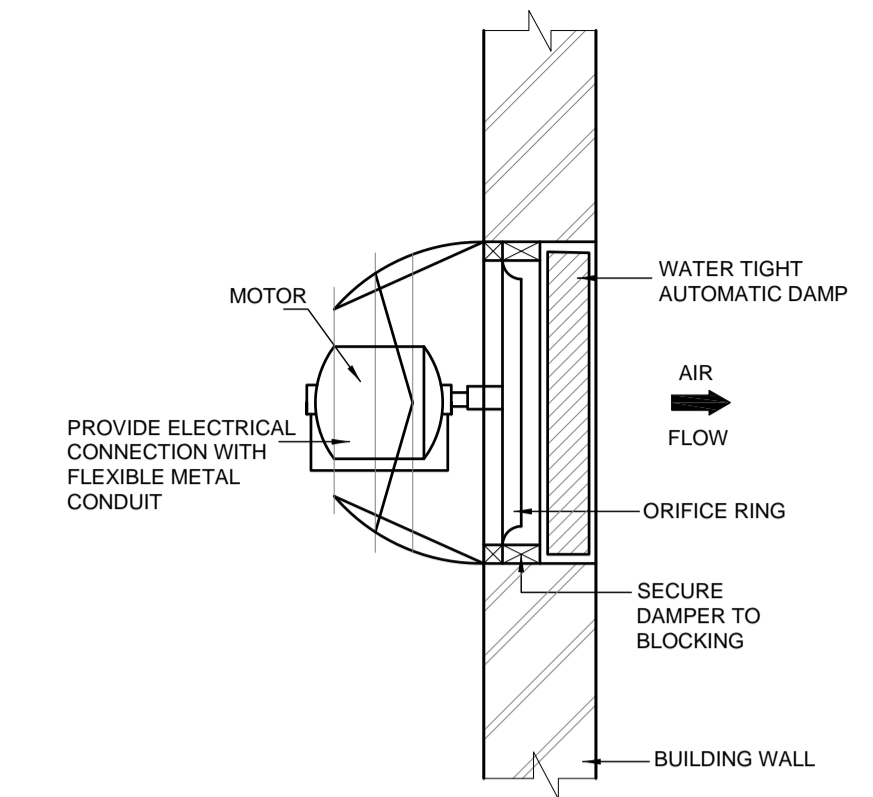


STIFFENED FULL SLIP

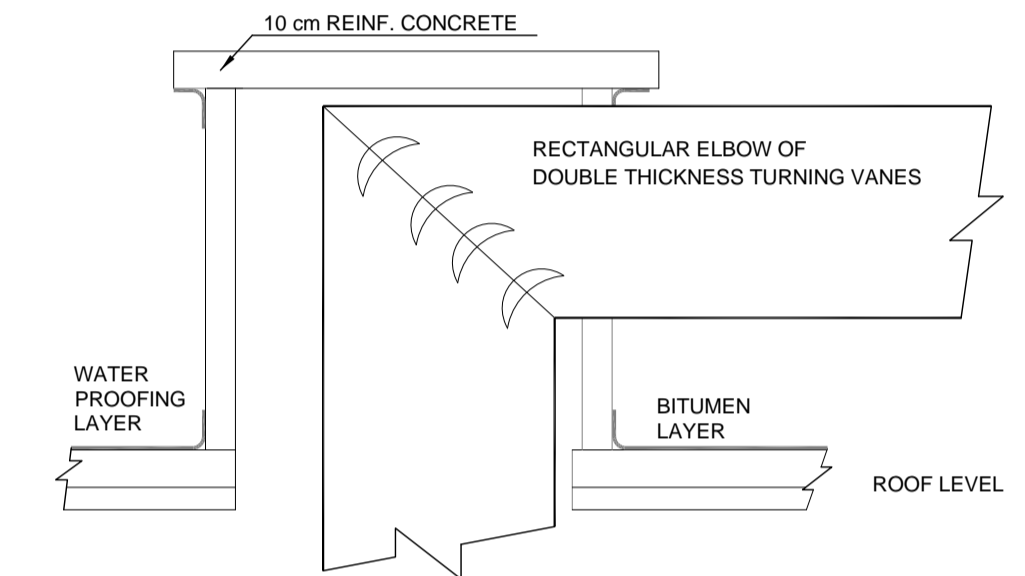
TRANSVERSE JOINTS



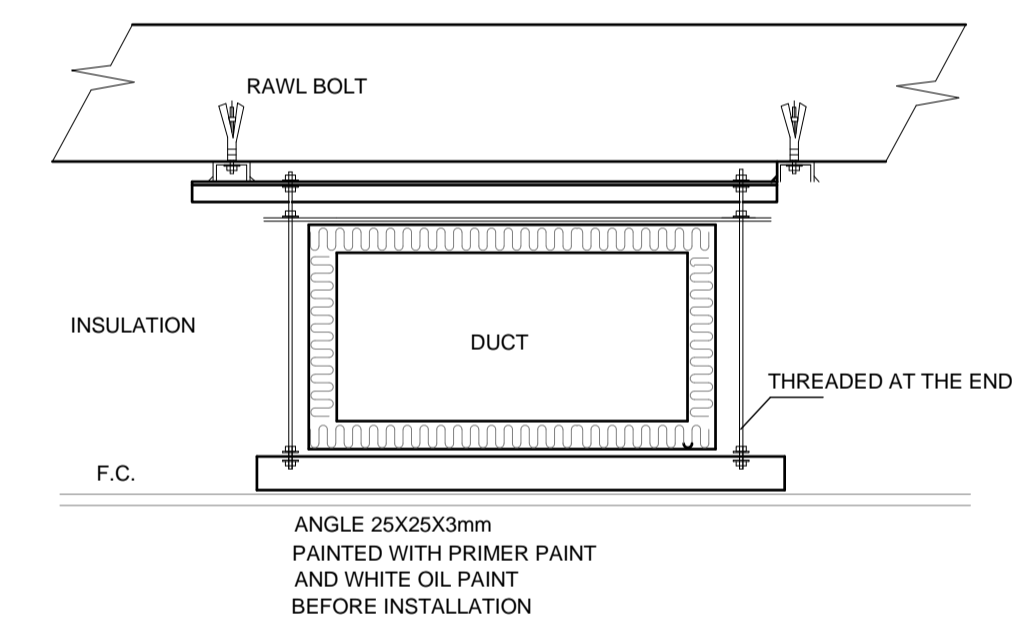
FLEXIBLE CONNECTION DETAIL



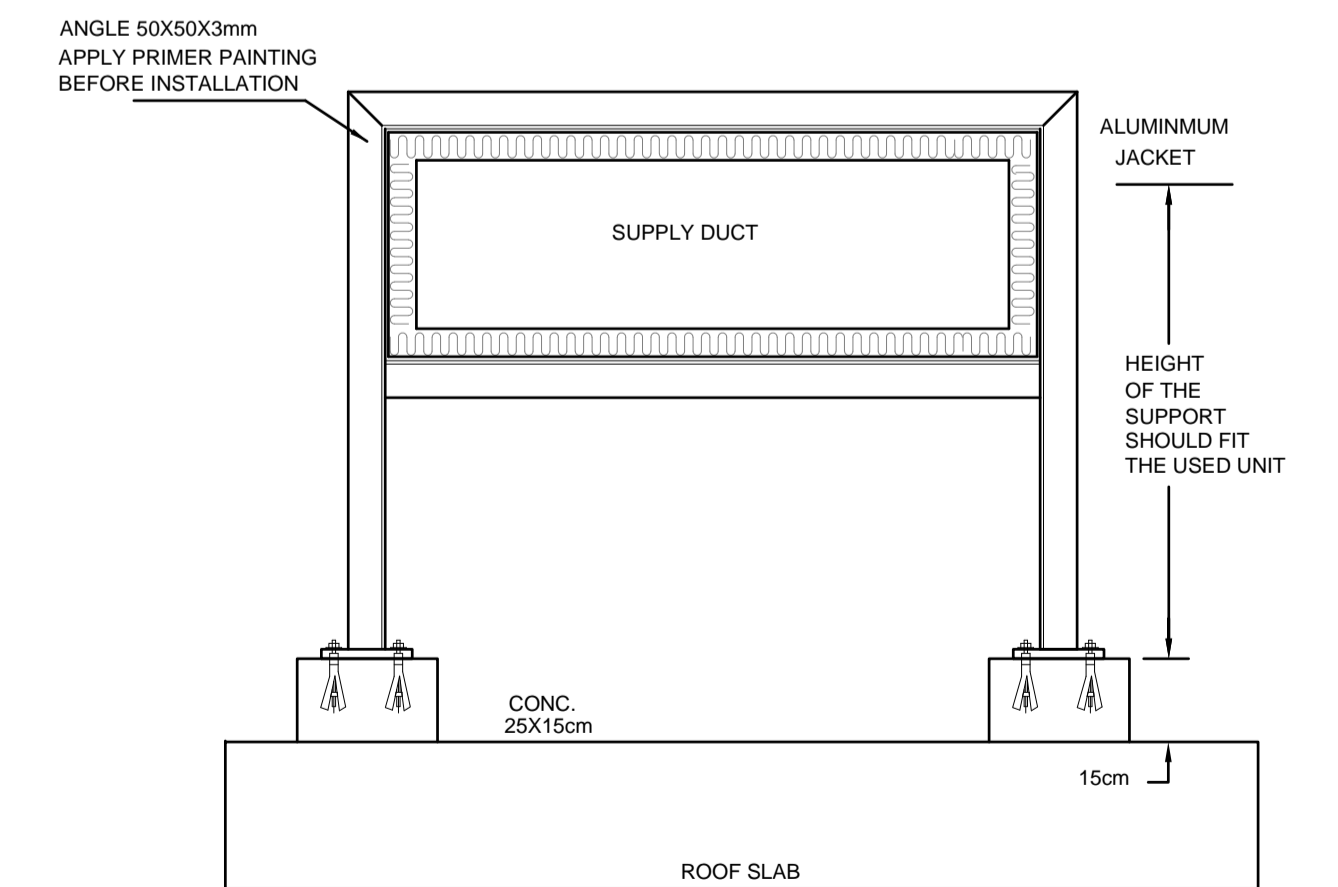
DETAILS OF THE INSTALLATION OF EXTRACT FAN



PENETRATION OF DUCTS THROUGH ROOF SLAB



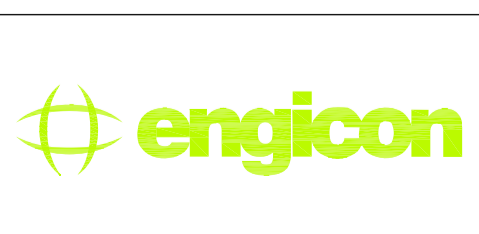
DUCT SUSPENSION FROM CEILING



DUCT INSTALLATION ON ROOF

REV.	DATE	REMARKS
0	JUNE 2019	VOL. IV - TENDER DRAWINGS

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PACKAGE 2

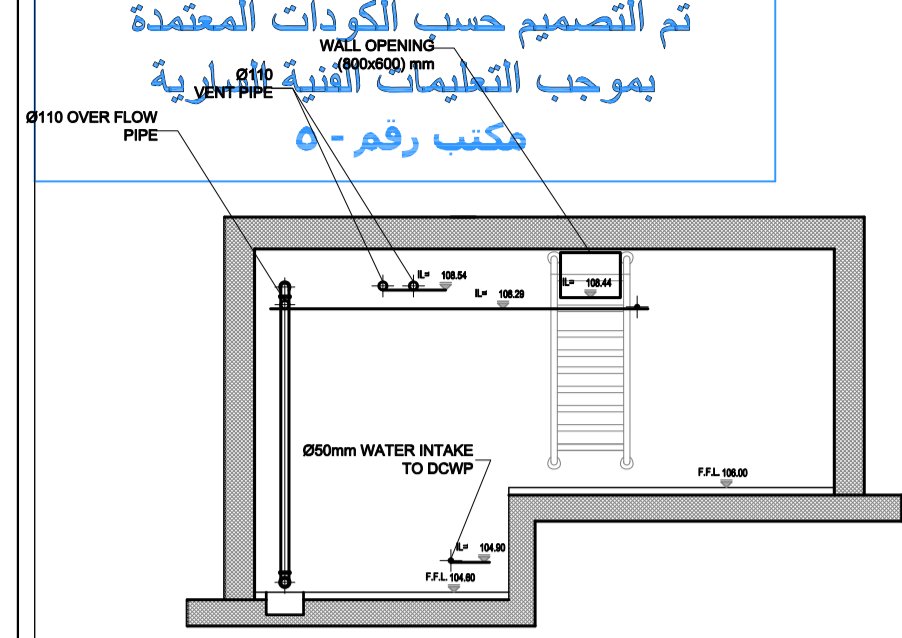
Thahr Al Sarow Basic School For Boys (Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY PROJECT (USAID SKEP)

DRAWING NAME:	MECHANICAL GENERAL DETAILS 06
Design:	CAD
Drawn:	CAD
Checked:	A.J.
SCALE:	N.T.S.
Date:	JUNE 2019
Approved:	W.Z.
DRAWING NUMBER:	SKEP 14-GM506

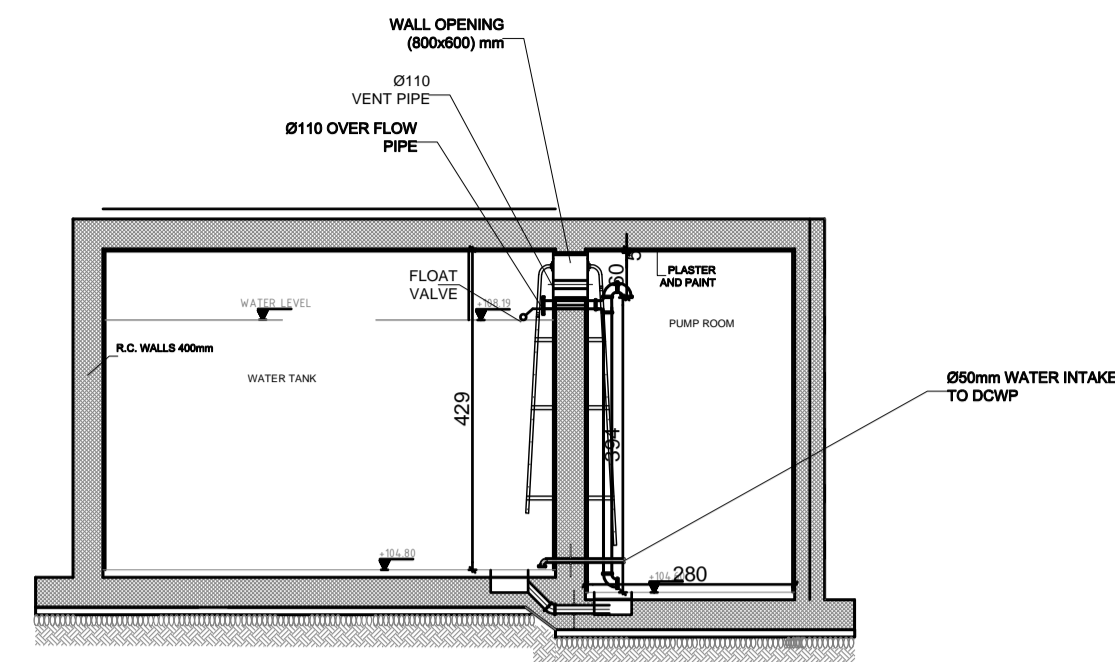
PLOT No	LOCATION	BASIN NO	Rev.:
435	Thahr Al Sarow	4 Dair Alliat	0



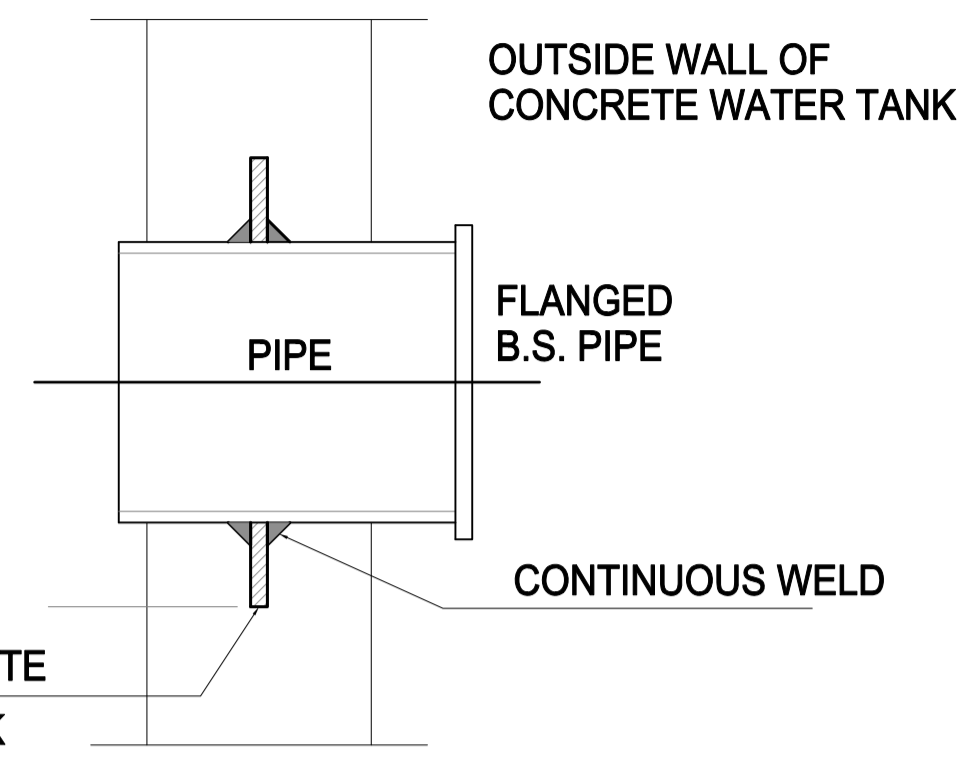
تم التصميم حسب الكودات المعتمدة بموجب التعليمات الفنية المعمارية مكتب رقم 0-



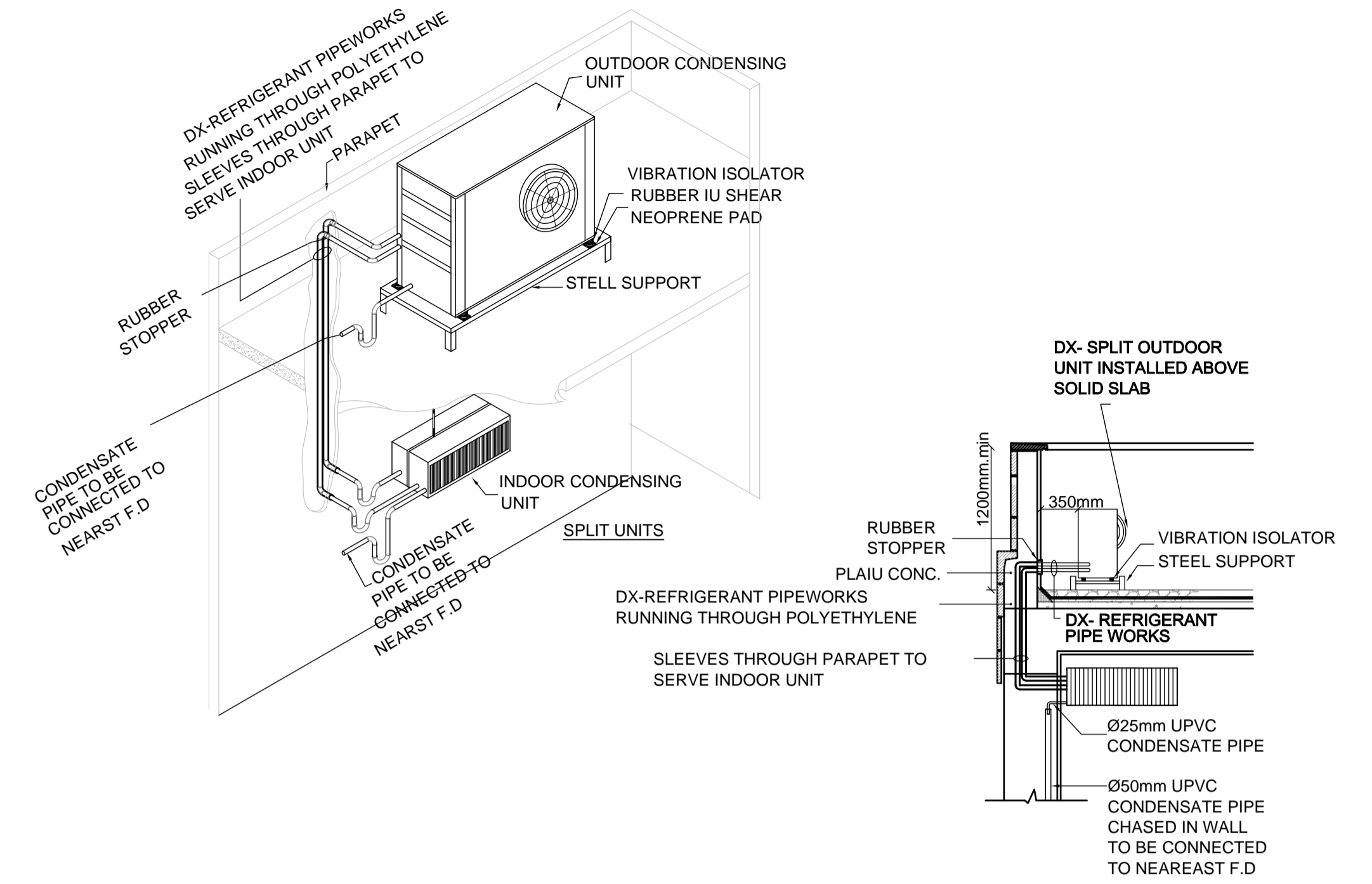
DETAIL OF WATER TANK SECTION



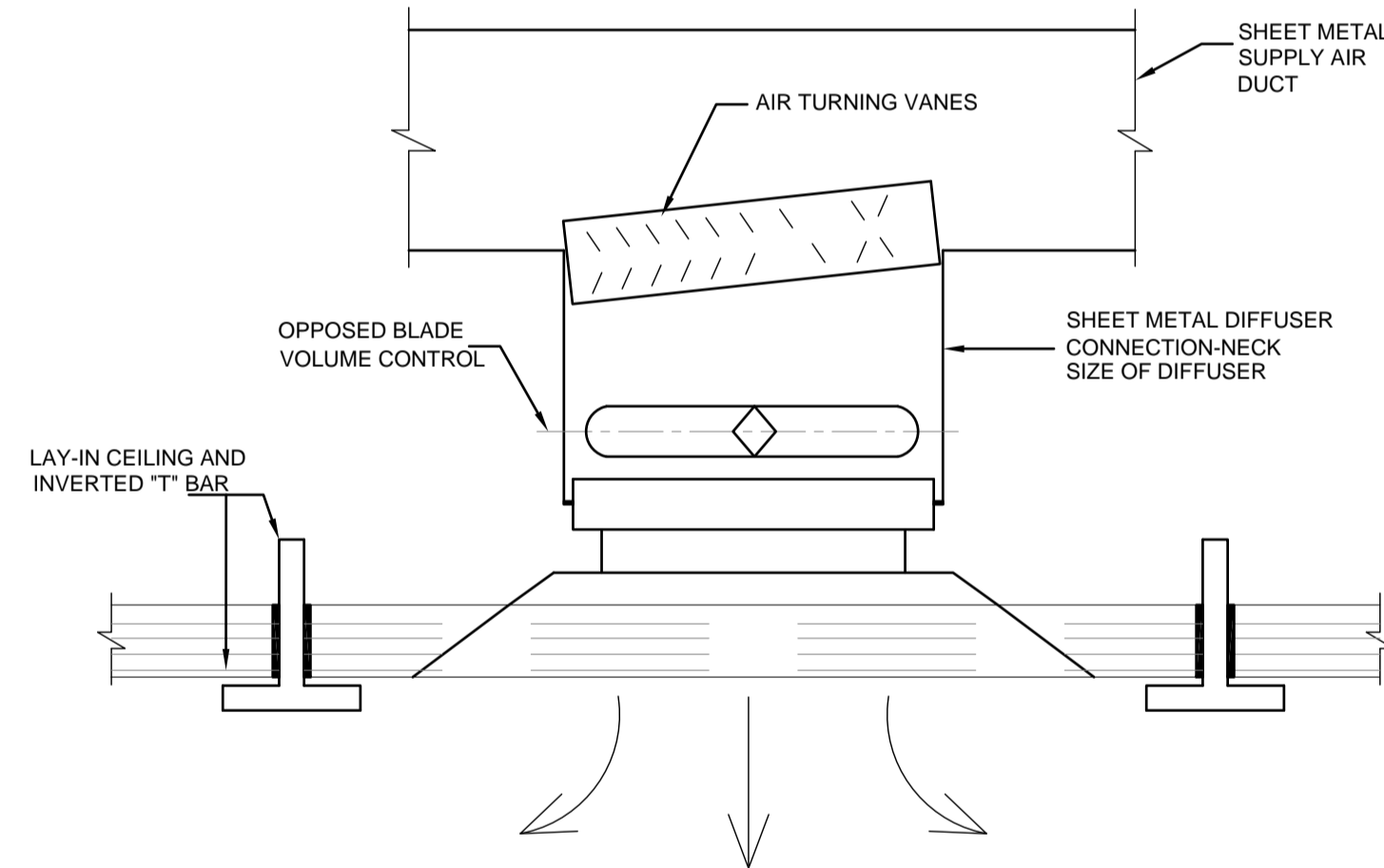
DETAIL OF RAIN WATER TANK SECTION



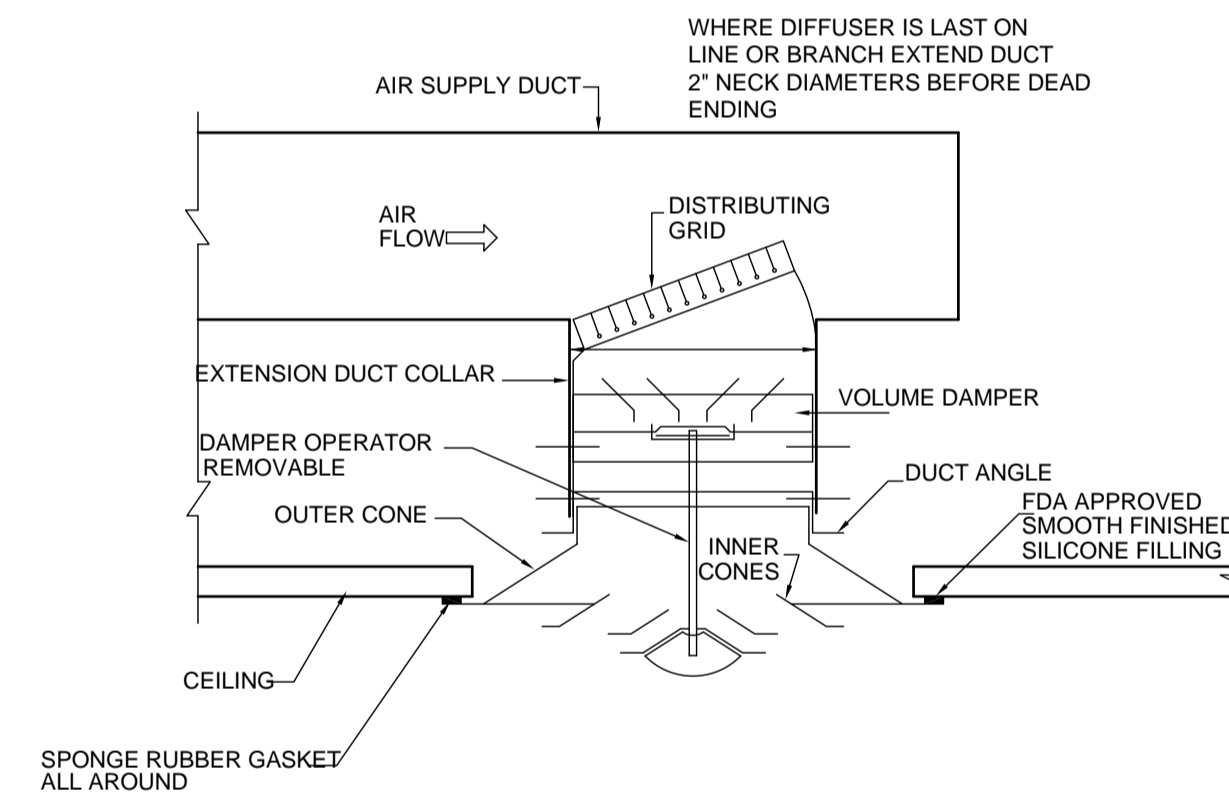
DETAIL OF PIPE PENETRATION THROUGH WATER RESERVOIR SCALE: NTS



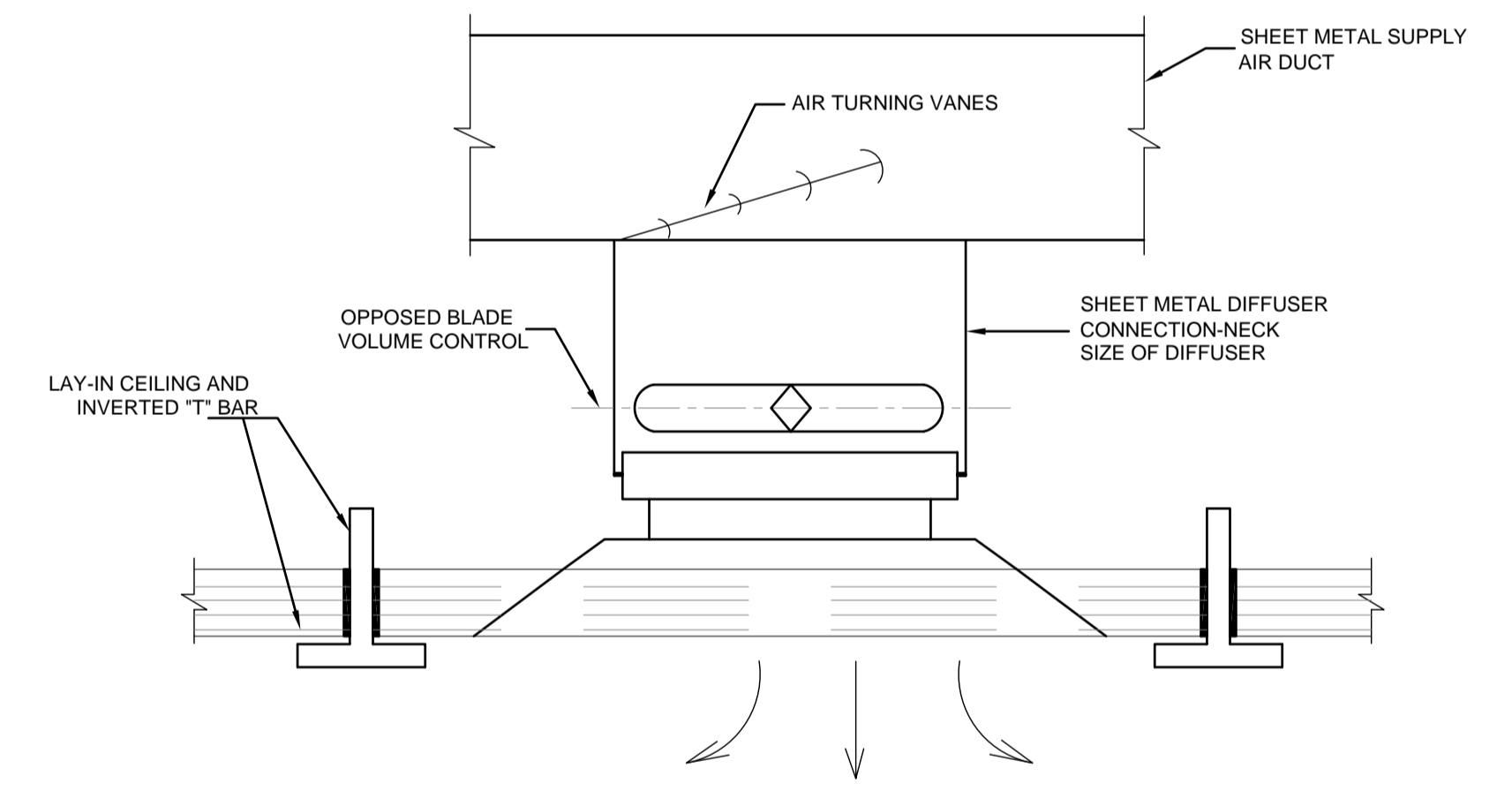
SPLIT UNIT CONNECTION DETAILS PIPES OR EQUIPMENT



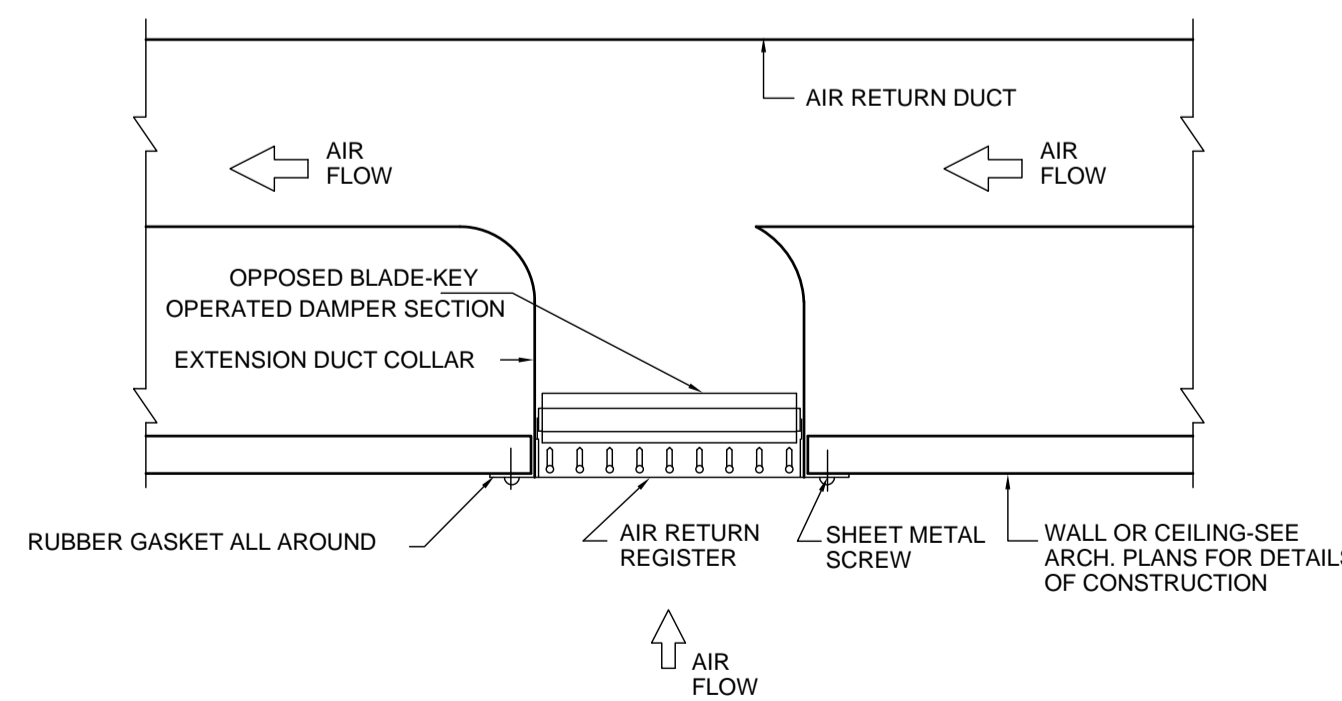
FOR LAY-IN T-BAR CEILING APPLICATION 4 WAY DIFFUSER SECTION



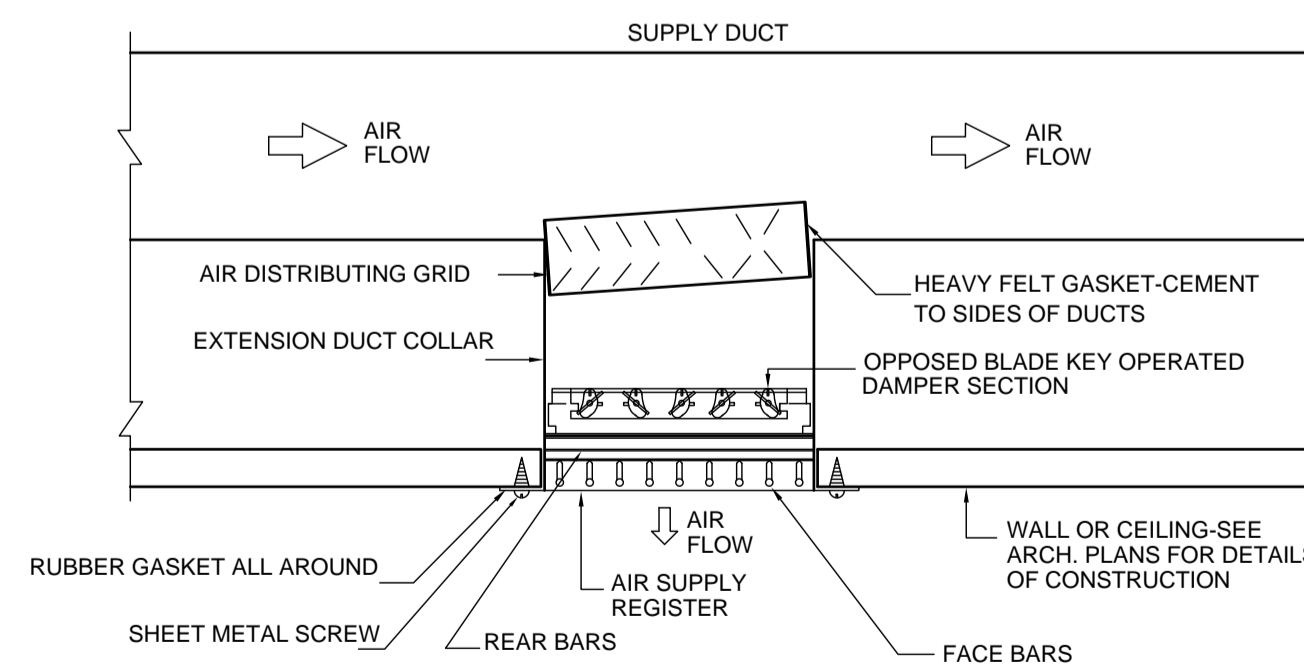
SQUARE OR RECTANGULAR DIFFUSER DETAILS OF THE INSTALLATION OF AIR REGISTERS AND DIFFUSERS SECTION



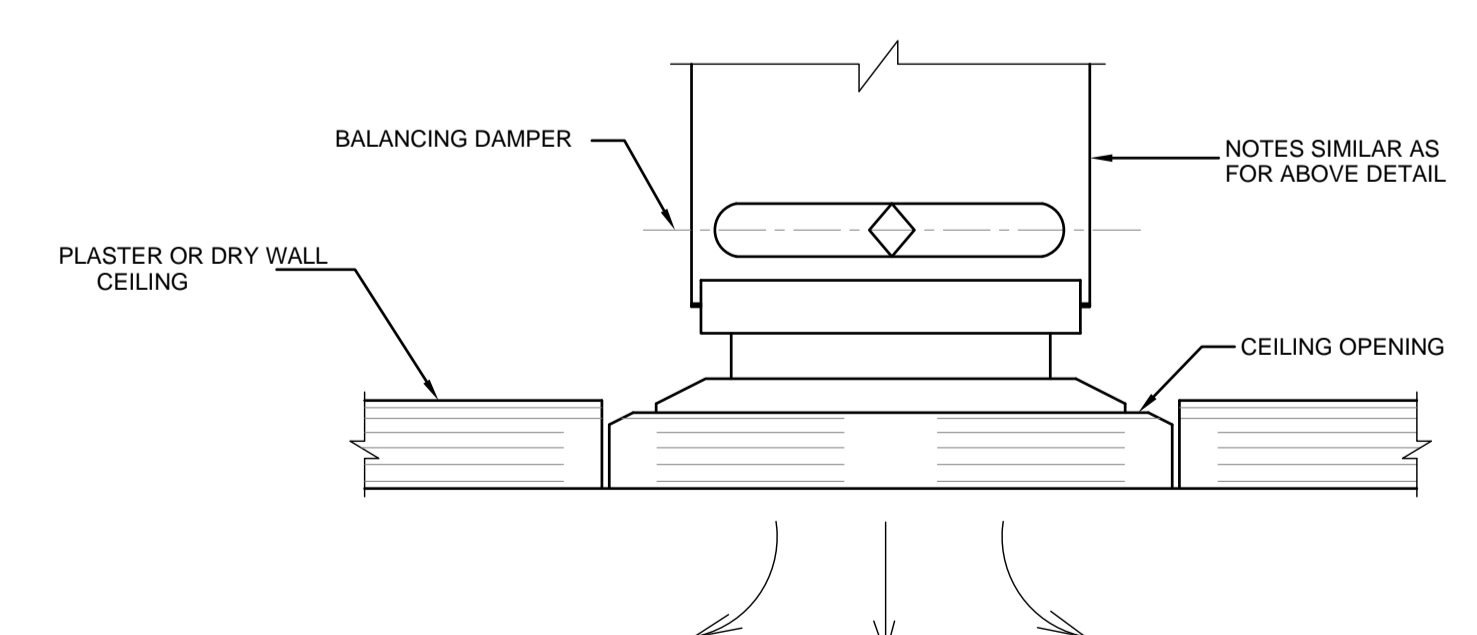
FOR LAY-IN T-BAR CEILING APPLICATION 4 WAY DIFFUSER SECTION



RETURN AIR REGISTER



SUPPLY AIR REGISTER



4 WAY DIFFUSER INSTALLATION FOR SURFACE MOUNTED APPLICATION SECTION

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Thahr Al Sarow Basic School For Boys (Jerash)  
SCHOOLS FOR A KNOWLEDGE ECONOMY PROJECT (USAID SKEP)

DRAWING NAME:  
**MECHANICAL GENERAL DETAILS 07**

DESIGN: CAD  
SCALE: N.T.S.  
DATE: JUNE 2019

DRAWING NUMBER:  
**SKEP 14-GM507**

Design: CAD  
Scale: N.T.S.  
Date: JUNE 2019

Checked: A.J.  
Approved: W.Z.

Rev.: 0